CRUDE CHOICE:
THE CENTRALITY OF LEARNING AND EMULATION IN THE DEVELOPING WORLD'S TRANSFORMATION OF OIL REGIMES

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Oil regimes have undergone a momentous transformation over the past 50 years. While the Arab OPEC nationalizations captured the world's attention, the parallel introduction of Indonesia's production sharing agreement (PSA) has produced a shift in ownership and control of oil in nearly half of the world. Contrary to popular narratives about the oil industry that privilege the coercive power of home countries and international oil companies, I argue that the transformation of oil regimes has been led by the developing world. Lacking significant power asymmetries and perceiving similarities of interests, the states of the South have learned from each other's experiences. As prominent developing countries have joined the ranks of PSA-users, prestige-seeking emulation has supplemented learning in driving diffusion.

This argument is developed through a two-level theoretical model. At the international level, it assesses how the distribution of power and peer groups affect the relative influence of coercion, competition, learning, and emulation. At the domestic level, it incorporates elite orientation to determine a state's receptiveness to diffusion by different means and sources. Applying this model to the diffusion of oil regimes, I argue that the success of the PSA, as an innovation of the South, is driven primarily by learning and emulation. I test this argument using a multi-method research design that combines quantitative analysis of an original dataset of petroleum regimes with qualitative evidence from U.S. government archives and interviews with senior industry experts.

The diffusion of the PSA is not just substantively but theoretically significant. The PSA has not only been widely adopted in the developing world, but is an innovation of the South, making it a true case of South-South diffusion. Given the Northern bias of the diffusion literature, the finding that this form of diffusion can be highly successful in an area of strategic significance to the rest of the world is indicative of the need to expand research on South-South diffusion. The argument advancing the centrality of learning and emulation is also significant to the oil literature, which has traditionally placed coercion at the center of policy-making.

BIOGRAPHICAL SKETCH

Nicole Weygandt received her Ph.D. in Political Science from Cornell University's Department of Government in 2017. She holds an M.A. in Political Science from Cornell University, an M.S. in Foreign Service from Georgetown University, and a B.A. in Political Science and Economics from the University of Chicago. Prior to her graduate studies, she worked as an analyst and later head of research at Taylor-DeJongh, a financial advisory firm specializing in energy and infrastructure project finance.

To My Parents

(and Colonel Drake)

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CHAPTER 1: INTRODUCTION

1 Transforming the World's Oil Regime

For nearly a century, exploration and production of the world's oil was almost exclusively pursued under a single type of oil regime. Private companies were granted extensive concession rights over vast territories and enjoyed the support of their home countries. At the same time, host countries perceived themselves as dependent and exploited. While some cut themselves off from private industry through nationalization, this remained a politically and economically risky endeavor. This situation began to change in the 1960s. Although the OPEC nationalizations and use of the "oil weapon" drew the attention of the international community, it was a different change in oil governance that revolutionized the modern oil industry. The Indonesian Production Sharing Agreement (PSA) espoused a different vision for the relationship between governments and investors. States were to be partners rather than regulators, and both parties would share in the gains from oil production. While this initial vision has not always played out as anticipated, the legal structures of the PSA have become the most widely used in the oil industry. Today, nearly half of all countries use the PSA, either alone or in conjunction with concessions or service contracts. This transformation has had political, economic, and legal implications for host countries while also shaping global energy supply. Globalization has ensured that individual countries' laws matter to all states, while also influencing which laws countries choose in the first place.

The success of the PSA was not a foregone conclusion. Oil companies strongly resisted this regime at first, and home countries were concerned about legal precedent and the adequacy of oil supplies. Narratives about the coercive power of these two actors would suggest that their opposition should have quickly thrown the PSA into obscurity. The global South, however, is far more influential in generating innovations and promoting its ideas than those narratives

recognize. It has been precisely the absence of power imbalance among adopters that has been at the heart of the PSA's success – which has now even begun to penetrate into the ranks of the powerful. Recognizing similarities between each other's interests and needs, developing countries have looked to each other for solutions to the problems of oil development. Learning becomes easier when it takes place among peers and the greatest success stories in oil development worth emulating have been developing states. While the first century of oil was defined by the interests of the powerful, the past fifty years have been shaped by the choices of the weak.

This argument stands in stark contrast to the two most influential narratives of the oil industry: "Blood for Oil" and corporate imperialism. The former, popularized by Michael Klare but also found among neo-mercantilists and neo-imperialists, assumes that home countries have a strategic interest in securing supplies of oil. Developments in oil markets have challenged those interests to such an extent that powerful actors, especially the United States, are turning to military force and naked coercion to secure control over oil. [1] The latter argument points instead to the coercive power of "Big Oil." Leveraging their resources, political connections, and market access, oil companies are perceived as strong-arming developing countries into unfavorable deals that only serve investors. Tactics extend from lobbying to bribery, but might even include

[1] According to Klare, "The use of military force to protect the flow of oil has been explicit U.S. policy since early 1980." At that time, the Carter Doctrine was implemented in order to create force projection capabilities to protect shipping lanes in the Persian Gulf (Klare 2007: 139). See also Klare (2002; 2007). Advocates of this hypothesis point particularly to recent U.S. involvement in Iraq and Syria. There is evidence linking oil to war, but resource wars are only one of many possible causal mechanisms. Colgan, for example, identifies eight causal mechanisms which he ties to one-quarter to one-half of all interstate wars since 1973 (149, 152). Glaser, on the other hand, identifies six causal pathways leading from oil to war (2013: 116-117).

embargoes and the overthrow of political leaders.[2] Whether motivated by security or oil, both perspectives suggest that Northern actors impose their preferences for direct control on host governments. Oil regimes are therefore not a choice, but the consequence of coercion.

In order to explain why learning and emulation have been so successful in driving the diffusion of oil laws in the South in contradiction of popular narratives, this chapter begins with an explanation of each of three oil regimes and what effect they have had on host governments. Section 3 outlines the pattern by which the concession has been displaced by the PSA over the past fifty years. Section 4 outlines the research methodology used to explore the argument that learning and emulation by developing countries, rather than coercion, has been the driving force behind the diffusion patterns of the three models of oil regime. Section 5 concludes the chapter by highlighting broader implications for academic research on oil and on policy diffusion. Above all, I suggest that the North does not decide who controls the oil, but that the South, informed by the experiences of peer states and the demands of domestic politics, has been at the forefront of policy change, transforming the global energy order within a single generation.

2 Three Models for the Control of Oil

2.1 Typology of Petroleum Regimes

Within the context of the modern oil industry, there are three commonly used petroleum regimes: concessions, PSAs, and service contracts. These regimes can be arrayed across a

[2] A key example of the former is Iraq in the 1960s, which Shaikh ‘Abd Allah al-Tariki described as a “sentence of starvation” in which Iraqi output was cut in response to the country’s adoption of Law No. 80 of 1961 (MEES: 3/17/1967). Cases of regime overthrow include Brazil, Argentina, and Peru (Rodman 1988: 164).

spectrum of private sector dominance to state dominance, with concessions representing the former, service contracts the latter, and PSAs occupying an intermediate position.[3] The choice of regime is of critical importance to host countries and, according to prominent industry experts, the history of the modern oil industry has, in large part, been a struggle over the evolution and implementation of each of them, where host governments have attempted to strike a balance between national control, investment levels, and government revenues.[4]

A *concession*, also called a license or a lease, represents a legal regime under which a government grants a company an exclusive right to explore and produce hydrocarbons within a specified area and timeframe. It places the full burden of costs and risks on the company, but in return grants broad flexibility in its operations and disposal of the resources it produces. Furthermore, ownership of petroleum is vested in the state *in situ* but transfers to the company when oil enters the wellbore, i.e. when it is produced. This means that, although the ownership of oil in the ground technically remains with the state, companies operating under a concession are able to book "all of the reserves to which … [they are] entitled."[5] In return for these rights, the company compensates the government in the form of signature bonuses, taxes, royalties, and other payments. Concession regimes tend to be viewed as most favorable to private companies, and are marked by the lowest level of government control over operations or resources.[6]

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[3] Vivoda (2009: 2).

[4] For major histories of the petroleum industry that make this argument, see Yergin (1990) and Parra (2004).

[5] Herrmann et al. (2010: 110). This issue of reserve bookings is extremely important for private-sector companies, as they are seen as an indicator of the future performance and profitability of the company and are thus reflected in the company's stock prices.

[6] See Vivoda (2009: 2); also Tordo (2007: 10).

In contrast, a *PSA* – first developed in Indonesia and widely adopted in the developing world – is a contract between the state and one or more oil companies in which the contractor gains the right to explore for and produce oil in a designated area and time period, but, unlike in a concession, the oil does not become the property of the contractor when it is produced. Rather, the contractor assumes the risks and costs of exploration in return for a *share* of the oil it produces, assuming ownership of that share only at the export terminal.[7] As a result, the government's revenue does not primarily take the form of taxes and royalties, but rather derives in large part from sale of the oil itself and tends to be more closely linked to the price of oil.[8] Furthermore, in most PSAs, the contractor's share of oil is not fixed; apart from the amounts sufficient for cost recovery, profit oil is typically distributed in a progressive manner, meaning that the government's share of profit oil increases as oil prices rise. The PSA is the newest form of ownership system, dating to the 1960s, and was specifically designed to balance host country concerns over sovereignty and the need for a "fair share" of oil production against the commercial needs of private investors.[9]

Finally, the *service contract* regime is one in which the government – typically via a national oil company – retains full ownership and control of all reserves and production within its territory. All petroleum reserves are formally and inalienably vested in the state. Private sector

[7] The precise location is contractually determined. While the norm is to transfer ownership at the export terminal, it is possible for this transfer to occur elsewhere, such as at the wellbore. The choice may appear to be largely symbolic, but does have legal implications, such as assignment of liability.

[8] For comparison, a survey of world petroleum systems by Johnston found that the royalty rate under PSAs tended to be only five percent, compared to thirty percent in concession systems. On the other hand, concessionaires were, on average, entitled to 92 percent of their production compared to only 63 percent for PSA contractors. It should be noted that government participation may be required under both regimes, but PSA participation tends to be substantially higher (Johnston 2001: xlvii).

[9] Wälde (2008: 63).

ownership of any kind is prohibited, and participation – when permitted – is limited to performing specific services under contracts. These "services" may be quite extensive, appearing very much like operations under other petroleum regimes, but compensation comes in the form of fees for service rather than oil.[10] As a result, contractors are unable to book any reserves, making this regime highly unattractive for publicly-listed oil companies. The service contract strongly prioritizes state sovereignty over private interests, but may at times come at the cost of efficiency or investment.

2.2 The Consequences of Regime Choice

Host government agreements, fiscal systems, or – as they are referred to here – petroleum regimes constitute a fairly specialized area of oil and gas law. The community of experts engaged in designing and implementing these regimes remains small and many of the differences between petroleum regimes might appear to be merely technical. Public debates over oil and gas rarely touch on differences between concessions and PSAs, although service contracts might be discussed in the context of nationalization.[11] Yet while there has been relatively little systematic study of the outcomes associated with different regime choices, existing research and anecdotal evidence suggest that the differences between them can be dramatic. These differences fall into three categories: political, economic, and legal.

Arguably the foremost distinction across petroleum regimes is their relative ability to ensure a sense of national *sovereignty*. Particularly given historical associations between

[10] In fact, in-kind payment may be strictly prohibited under national laws or constitutions, and even risk-based payment can be problematic in some jurisdictions.

[11] Although rare, such discussions nevertheless do take place. In a book published for general consumption and listed among Amazon's top five best sellers in the Oil & Energy segment, Steve Coll dedicates a significant portion of his chapter on ExxonMobil's activities in Iraq to the choice among PSAs and service contracts (2013).

imperialism and natural resource exploitation, much of the developing world is extremely sensitive to concerns over "giving away" the national patrimony.[12] This is exacerbated by the fact that many early concessions did effectively grant companies ownership over sub-surface resources in a way that was later perceived as highly unbalanced. Since then, governments have frequently enshrined national ownership of the subsoil into the constitution or at least into petroleum legislation.[13] The contracts themselves have evolved, as well: Although modern concessions no longer include subsoil rights (with the exception of private lands in the U.S. and portions of Canada), in many countries they continue to perceived as an affront to national sovereignty, as seen in recent debates over oil reform in Mexico.[14] In contrast, PSAs have, for the most part, escaped this association. Full nationalization, finally, is often portrayed as the ultimate assertion of sovereignty.[15] While some may see the difference as merely symbolic, the failure to take appearances into account can have real political consequences. Opposition parties

[12] According to Parra, "The term *concession* is now and has for some years been considered politically incorrect because it smacks of rights reluctantly or corruptly granted by governments to foreign companies, under some kind of duress; or because the concessions stem from a time when now-independent states were mere colonies or protectorates" (2004: 8). As Nakhle points out, however, "it is not the principles of the regime per se that devalued government sovereignty at those early days of oil activity; it was a combination of different political, economic, social and legal conditions, which have changed dramatically since then" (Daniel, Keen, McPherson 2010: 93-94).

[13] There are some differences in terms of who is vested with subsoil rights under the constitution or the law. Variations include the state, federal or provincial governments, relevant ministries, the national oil company, the people, the Crown, or (in the case of Malawi's 1981 Mines and Minerals Act) the Life President.

[14] The opposition candidate, Andrés Manuel López Obrador has likened the energy reform to "a betrayal of the nation" and treason (Krauze 2013).

[15] While this is a common argument, Nakhle argues that this is not necessarily true. Indeed, "full public ownership could well mean the loss of political control, poor accountability and the progressive transfer of direction and influence to unelected boards with their own powerful constituencies" (Daniel, Keen, McPherson 2010: 112).

are likely to seize on any such "giveaways" while labor groups and civil society may stage protests against private sector-friendly reforms.[16]

Another political difference between the regimes has been identified by Luong and Weinthal. Challenging the notion that there is a direct link between oil revenues and *institutional outcomes* (commonly studied as one aspect of the "oil curse"), the authors propose that "who owns and controls the mineral sector" intervenes in this relationship.[17] Countries differ in terms of whether the state or the private sector owns and controls the resources and whether or not the private sector is foreign or domestic. Each of those combinations of factors, the authors argue, affects popular expectations about the role of the state in society and demands for fiscal accountability. This has implications for economic performance, the level of democracy, and propensity for corruption.[18] The authors argue that state ownership and control leads to the worst institutional outcomes, while private domestic ownership and control produce the best outcomes among oil producers, suggesting that the resource curse is conditional on what they describe as ownership structure.[19]

At first glance, one might also expect significant differences in the *economic benefits* from each of the petroleum regimes. As shown in Figure 1, PSAs tend to be associated with a lower government take[20] than concessions: In a global survey of fiscal terms, Johnston found

[16] Bernard Mommer, Chairman of the OPEC Board of Governors for the year 2015, claimed that private ownership of oil carried such a high political cost in Mexico that it precluded reform and instead required a revolution in the form of nationalization (2002: 4).

[17] Luong and Weinthal (2010: 4, 27).

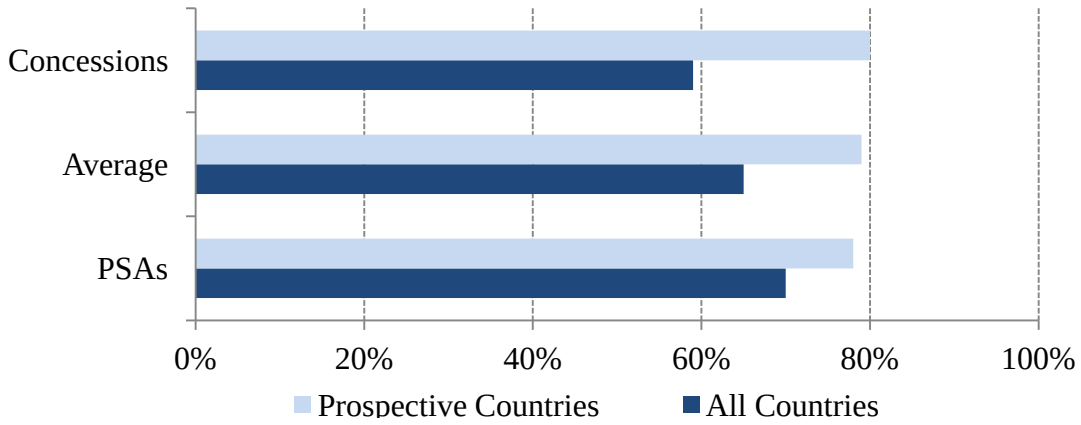
[18] Luong and Weinthal (2006: 259).

[19] Luong and Weinthal (2010: 12-13, 51-55).

[20] Government take is defined as "the government's share of economic profits from all means by which the state extracts rent: bonuses, royalties, profit oil, taxes, Gvt. working interest, *etc*." (Johnston 2001: xxvii).

that the difference between average government take for these two regimes was eleven percent. However, this difference dropped to only two percent when comparing a subset of similar countries (specifically, highly prospective countries scoring in the top twentieth percentile).[21] Recent innovations such as sliding-scale royalties and windfall taxes are able to produce similar outcomes for concessions as participation does in PSAs.[22] Even in service contract regimes, it is possible that risk-based remuneration could result in similar financial outcomes for the state.[23] For this reason, economists frequently argue that there is no *a priori* difference between the three petroleum systems.[24]

FIGURE 1. TYPICAL GOVERNMENT TAKE BY COUNTRY TYPE



Source: Johnston, *International Petroleum Fiscal System Analysis* (2001)

[21] Johnston (2001: xlvii-xlviii).

[22] Additionally, in McPherson's view, "Efficient taxation, without participation, can produce more revenue for the state than state participation where participation results in even a one year delay in project start-up" (Daniel, Keen, McPherson 2010: 272).

[23] It would, however, still not resolve the problem of reserve booking for the private company engaged as a contractor.

[24] Van Meurs (2008: 13).

Lawyers, on the other hand, tend to agree that the three petroleum regimes do carry important distinctions in terms of *investor protection*. Contractual systems, which include both PSAs and service contracts, commonly have benefits that are less likely to be found in concession contracts. The most important of these are arbitration clauses, choice of law clauses, and stabilization clauses. Arbitration clauses enable parties to resolve conflicts at specified arbitration courts. The arbitration process tends to be both faster, less public, and may be less expensive [25] than regular court proceedings, but the existence of arbitration clauses also guarantees corporations a form of recourse that they can initiate. Choice-of-law clauses specify the laws that apply to legal proceedings in the event of conflict.[26] Finally, stabilization clauses freeze or lock in the terms of the contract at the time it is signed, preventing subsequent changes in taxes, royalties, environmental regulations, or other areas.[27] As a result, some have argued that PSAs have in some ways become more desirable than concessions as they offer stronger protections from political risk.[28]

Overall, evidence from international surveys and expert opinion suggests that, while the differences between petroleum regimes are sometimes exaggerated and are growing less

[25] Anecdotal evidence suggests that this is not always the case, and secrecy surrounding arbitrations makes it difficult to assess typical outcomes.

[26] Most commonly, they specify New York, Stockholm, Paris, or other major transaction centers located in developed countries. The logic underlying choice-of-law clauses is that – in addition to being more familiar to investors – the laws cannot be changed to the host government's advantage in the event of a conflict.

[27] Because concessions or licenses are governed by administrative law, regulations cannot be locked in the same way as they are for contractual arrangements.

[28] This argument is made by Nakhle, who states that, "PSCs were originally devised to protect weak states from the IOCs. Today, however, PSCs are generally considered as protecting IOCs from the political risks associated with upstream investment in unstable and developing countries" (Daniel, Keen, McPherson 210: 115). It is worth noting that, in spite of these legal advantages for the oil companies, the most common view among industry experts is that companies most prefer the concession over PSAs.

pronounced,[29] their choice has real political, economic, and legal consequences for host countries, even aside from the risk of foreign intervention. Given these risks and benefits – along with the fact that oil companies initially strongly supported any challenge to the concession system – it is important to explore how and why countries have chosen their petroleum regimes. If external actors or impersonal markets are imposing their preferences on countries, the outcomes could be suboptimal from the home government's perspective, whereas conscious efforts to choose the most suitable regime could result in superior long-term outcomes. The following section explores the patterns of petroleum regime adoption over time and the circumstances that appear to have led to these changes.

3 Three Stages in the Transformation of Oil Regimes

"*In my own professional experience, starting during and at the end of the last cycle, from 1976 onwards, part of the skill in negotiating host state-investor arrangements was to provide to the investor what it required, that is management control over risk capital invested, while providing to the government the outward appearances of sovereignty and power. One can view the now prevailing production-sharing contract as a legal instrument that satisfies both essential needs of investor and government.*"

– Thomas Wälde, former United Nations Inter-Regional Adviser on Petroleum and Mineral Legislation[30]

[29] None of the three petroleum regimes has remained constant over time and, in practice, the regimes often occur in hybrid forms that borrow elements from others that have proven effective at forestalling conflict.

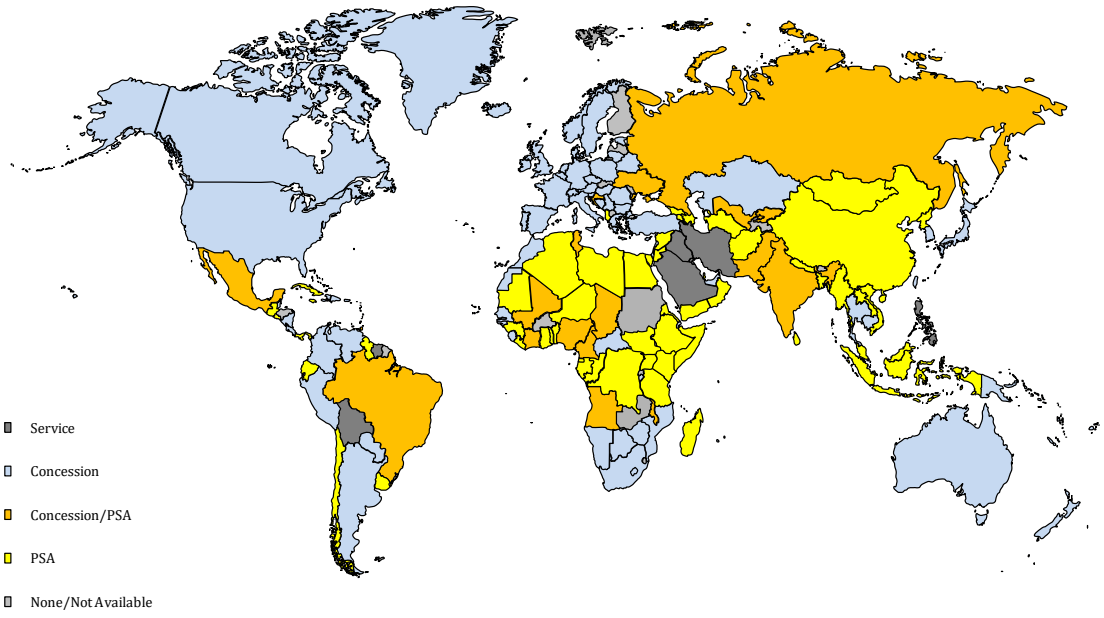
[30] Wälde (2008: 146).

Over the past fifty-five years, the near-universal concession has to a significant extent given way to the PSA, with limited (though important) gains for the service contract. PSAs have either fully supplanted other systems in many areas of the world, or have been combined with both of the others in a mixed regime (see Figure 2 for a map of petroleum regimes in 2015). Not only is the PSA's success inconsistent with popular conceptions about the ways in which companies and their home governments impose their preferences – captured by the myths of "Blood for Oil" and corporate imperialism – but it is also inconsistent with standard conceptions of diffusion. Academic research on the spread of laws, norms, and policies across countries has tended to emphasize a pattern of North-North or North-South diffusion,[31] that is, diffusion among developed countries or from developed to developing countries. The PSA case, on the other hand, almost exclusively follows a pattern of South-South diffusion.[32] This pattern of diffusion, I argue, is more easily explained by host government choice – whether that is driven by the exchange of information about best practices or simply imitation of prominent success cases – than by external imposition. The following section provides a brief historical overview of the way in which the South seized control over natural resources and the conditions that led them to their regime choices.

[31] For example, Simmons et al. suggest that some mechanisms of diffusion have tended to be associated with center-periphery dynamic, stating that, "Coercion theorists suggest that policies diffuse from the "center"" (2008: 10). Within the legal literature, see Towns (2012: 181, 183), Marsh and Sharman (2009: 280), and Langer (2007: 622).

[32] This finding is also somewhat inconsistent with recent research on regime complexes. Focusing specifically on energy regimes, Colgan, Keohane, and Van de Graaf have suggested that "It may not matter if weak actors are unhappy with the situation" suggesting that change comes from powerful players (2012: 120).

FIGURE 2. THE DISTRIBUTION OF PETROLEUM REGIMES, 2015



3.1 The Era of Foreign Control

Prior to Indonesia's innovation of 1960, host governments had only two policy choices available to them: concessions or a state monopoly.[33] Many governments were not truly independent and had little control even over these two choices; those that were free to choose faced powerful external pressure to conform to the concession regime. The industry at the time was dominated by just seven large oil companies (the "Seven Sisters") that, owing to vertical integration, could block access to downstream markets if countries made the "wrong" policy decision. There was also sufficient surplus of production in the international system for companies to credibly threaten to keep production below capacity or choose not to invest in new

[33] Service contracts that involved a significant role for oil companies were only introduced in the 1970s, when Iran's signed such a deal with ERAP. Prior to that, any services would have remained severely limited, and even following this deal, service contracts have remained unpopular with major oil companies.

exploration, magnifying their influence over governments. Historical memory also did not favor service contracts: the Mexican nationalization of 1938 was met with an oil company embargo[34] and had a deterrent effect on other countries.[35] The Iranian nationalization of 1953 underscored these lessons, resulting in an overthrow of the government as well as a significant loss of market share. In this environment, changes in petroleum regime were singular and driven by narrow situational factors, and the two petroleum industry myths looked far closer to reality than they do today.[36]

3.2 The Control Revolution of the 1970s

The 1960 to 1980 period – frequently described as "nationalist"– introduced a new policy alternative when Indonesia implemented its first PSA in 1966 and demonstrated the feasibility of service contracts when Iran signed such a deal with French oil company ERAP. The consequences of both choices would take some time to become clear, but these initial steps offered encouragement – and political pressure – for other countries to follow the path of reform. Although changes in industry structure had already begun to erode some of the companies' power by the 1960s, host governments did not become fully aware of changes in the international environment until OPEC members began to achieve negotiating success in the 1970s. The first companies to agree to new petroleum regimes were not the Majors, who strongly resisted

[34] The response from the U.S. government, on the other hand, was relatively weak, limiting itself to a demand for prompt, adequate, and effective compensation in order to avoid alienating Mexico and creating a foothold for Germany on the continent during a time of rising tension.

[35] Kobrin (1985).

[36] Yet even in these, non-oil factors were at least as important to outcomes as were oil-related issues. In Mexico, U.S. foreign policy towards Germany led it to adopt a more conciliatory approach than Blood for Oil would suggest, and the Iranian intervention, which involved not just Britain but also the United States, is difficult to attribute to the nationalization given that U.S. companies were not even part of AIOC at the time.

changes that threatened their control over operations and resources,[37] but were rather independent oil companies from the U.S. and Europe that were moving abroad. These firms were willing to accept far less favorable terms in order to break into new markets and were more accommodating towards legal innovations.[38]

Beyond the increase in the number of potential investors, host governments' efforts were strengthened by explicit policy solidarity, particularly among the more "extremist" group of Arab states (Egypt, Syria, Algeria, and Iraq) that sought full state ownership. New international petroleum organizations also encouraged information-sharing among governments: Indonesia's reformers acknowledged the influence of Venezuelan and Middle Eastern policy thinkers in their approach to designing the PSA,[39] and regular meetings among OPEC members ensured that experience would be shared among countries. Even outside of OPEC, developing countries cooperated in their efforts to change oil laws, establish national oil companies, and remake international law in their favor. For example, Indonesia's national oil company cooperated closely with Malaysia to assist it with rewriting its oil laws and negotiating with oil companies, including hosting multiple training visits.[40] At the international level, a series of U.N. General

[37] According to Bindemann, "The major oil companies were initially not very keen on PSAs. They were reluctant to invest capital into a venture which they were not allowed to own or even to manage. There was also concern about setting a precedent that might affect their operations elsewhere. Thus, the first foreign firms to enter into PSAs were independent oil companies" (1999: 68).

[38] Beyond simply increasing the number of companies with whom countries could negotiate, independent oil companies also tended to possess less bargaining power than the Majors that had previously dominated international oil markets. Independent oil companies are not fully vertically integrated and therefore do not benefit from the same level of control over downstream markets as the Majors. Additionally, many of them were highly dependent on individual markets for their oil supplies and could not afford to boycott in response to host government policy changes, as became apparent in Libya, where Occidental was the first company to accede to a 51% government stake.

[39] Sutowo (1972: 10-11).

[40] AmEmb Jakarta (May 30, 1973).

Assembly votes on the Permanent Sovereignty of Natural Resources established the right to nationalization and sovereign control over oil and other resources. Growing acceptance of this concept – coupled with Western governments' concern over Soviet influence in oil-producing regions – also reduced home governments' willingness to intervene as direct parties to investment disputes.[41]

Over the course of this 20-year period, countries' success in asserting sovereignty and increasing government revenue accumulated, giving others greater confidence in the likely outcomes of policy changes. It also gave host governments an opportunity to reveal the significance of some of these changes, as most dramatically illustrated in their ability to wield the "oil weapon" during the oil shocks of the 1970s. Finally, the prominence of early movers in the Middle East encouraged imitators. Saudi Arabia feared domestic political unrest if it did not achieve similar gains as other countries in the region, leading it to push for full nationalization even as it preferred a more limited form of government participation.[42] Thus, just as the power of the large international oil companies was on the wane and home governments became less inclined to intervene, host governments learned to work together to improve their domestic policies and assert themselves on the international stage. This confluence of factors encouraged oil reform, leading to the adoption of service contracts in countries that saw themselves as able to manage their own sectors, and to a shift towards PSAs among producers that wanted to become active partners in a key sector of their economy.

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[41] To the extent that home countries chose to intervene in disputes, it was typically in the role of mediator, or in response to threats to other strategic interests (Krasner 1978).

[42] Stevens refers to a political "bidding war" that emerged as a result of radical countries' nationalizations (Stevens 2012: 181). This view is confirmed by U.S. government analysts (AmEmb Jidda Feb 17, 1972).

3.3 Accommodation and New Status Quo

By the 1980s, companies had largely learned to accommodate themselves to the new regimes – which themselves had begun to evolve in response to experience by governments and compainies – and even began to recognize benefits from improved relations with host governments. They discovered that, while they gave up partial ownership, they rarely gave up as much operational control as they had feared.[43] Among countries, the experiences of first-movers and their long-term outcomes allowed others to make more informed choices about which regime suited their needs. The oil price collapse of the 1980s offered particularly valuable lessons about the benefits and risks of the various oil laws under challenging market conditions. The visible problems of oil dependency in many regions of the world, confirmed by scholarship on the potentially negative effects of oil revenues on economic performance, democracy, and corruption – captured under the title of the "resource curse" – reduced the eagerness with which countries would imitate more nationalistic oil states (and also affected the availability of development aid and technical assistance in the natural resource sectors). These experiences, interpreted through the frame of neo-liberal ideology, ultimately appeared to underscore the weaknesses of state ownership[44] while also demonstrating that PSAs were not as revolutionary as initially thought and could even carry advantages for oil companies[45] International consultants

[43] The PSA has been described as a "*modus Vivendi* in the unending battle between a host country and foreign oil companies" (Fabrikant 1975: 303), and initial fears that regulators would make aggressive use of the management clause proved largely unfounded (316).

[44] Studies comparing NOC performance to those of IOCs have proliferated in recent years. For a discussion of the history of the ideology behind national oil companies and their subsequent retreat, see Stevens (2008b).

[45] In Russia, for example, international oil companies strongly advocated in favor of PSAs over existing licensing structures as self-contained contracts would offer greater protections in a highly uncertain legal and political environment.

not only normalized the PSA, but in some instances even promoted it over concessions, such as when Russia liberalized its oil sector in the 1990s. Concessions themselves also evolved over this and the preceding period, borrowing elements from PSAs and abandoning many of their controversial features in order to become more acceptable and avoid further investment conflict. While in many post-colonial states, concessions continued to remain politically tainted, other countries have opted to maximize their flexibility, writing enabling laws that allow them to choose from among all three petroleum regimes, depending on circumstances.

By 2015, PSAs had reached every region of the world when Mexico abandoned the service contract regime in favor of a mixed system. In that year, 49 percent of countries for which petroleum regime information was available used the concession system, compared to 47 percent PSAs and only 4 percent service contracts.[46] This evolution represents a dramatic transformation in the relationship between governments and investors. Home countries have become less interventionist, while companies have lost much of their power to dictate terms. Host governments, on the other hand, have largely succeeded in asserted sovereignty over their natural resources and questions of control have largely been settled.[47] They can now choose among three rather than two systems for governing oil, abandoning the false dichotomy between state and private control. The changes that made this possible are both external and internal. Shifts in international oil markets have weakened the coercive power of both states and companies, undermining both Blood for Oil and corporate imperialism as drivers of industry

[46] Author's estimates.

[47] That settlement has largely been a compromise: Host governments maintain formal control of subsurface resources, but private companies continue to have a privileged position in terms of operational control, reflecting their financial investment in the projects.

change. At the same time, closer cooperation among host governments in sharing information and negotiating strategies, along with regular use of industry advisors, has created the conditions for learning to play a greater role. With a wider range of success stories, new opportunities for emulation have also emerged. Which countries are seen as role models or relevant sources of information about which regime is "best" will, however, vary according to domestic politics and national identity. Together, these developments have proven that developing countries are far more influential in shaping transnational legal orders than myths of the oil industry or diffusion scholarship generally recognize. Coercion may still continue to play some role in individual deals in the form of bargaining power,[48] but choice, not imposition, has shaped the pattern of control of the industry.

4 Dissertation Methodology

This dissertation systematically explores the evolution and patterns of diffusion of oil regimes in order to better understand the role of the developing world in transnational legal orders and to explore how differences in countries' levels of development and openness to the world affects the ways in which ideas and laws travel across countries. In drawing on a single case (diffusion of oil regimes) to test and generate hypotheses about a larger set of cases (diffusion of laws and ideas across developed and developing countries with different types of elites), it relies on the analytical narrative approach advocated by Bates, Greif, Levi, Rosenthal, and Weingast. This approach consists of multiple steps: first, a narrative is created to outline the

[48] The extent of changes resulting from negotiations are extremely hard to ascertain, as individual contracts are very rarely made public. Numerous individuals interviewed for this study agree that, while model contracts are readily available, the actual deals signed by companies are typically held in secrecy.

basic structure of a game theoretic model or theory capable of formalization, followed by the generation of the model itself, including multiple testable implications. This is followed by testing the model and its implications using in-depth case studies.[49] The purpose of analytic narratives is to impose scholarly discipline while creating a parsimonious model that can be applied to a wider range of cases.[50] The model developed here – outlined in Chapter Two – is not fully formalized but offers a framework for anticipating diffusion mechanisms across a wide universe of cases based solely on country type. In testing those hypotheses, the dissertation relies on a combination of qualitative and quantitative research methods in accordance with Lieberman's nested analysis approach[51] or Lee and Strang's recommendation to couple pattern-finding with process tracing, an approach particularly suited for studies of diffusion.[52] This is because, on the one hand, it reveals temporal and spatial patterns of policy adoption while, on the other hand, exploring the precise operation of the causal mechanisms. This latter step can be particularly important, as causal mechanisms are often difficult to distinguish in practice.

The quantitative or pattern-finding component of this research employs both binary and multinomial logistic regression models that cover all independent countries in the international

[49] Levi and Weingast (2016: 1-2), Bates et al. (2000b: 697). Bates et al add the importance of iterating between theory and data rather than follow a strictly deductive approach (2000a: 694).

[50] The authors emphasize that the approach is open to and relies on contingency, but favor case studies "where we believe that problems of randomness or contingency are not too severe" (Bates et al. 2000: 691).

[51] This approach advocates combining complementary qualitative and quantitative research methods for the purposes of making causal claims (Lieberman (2005: 450). The quantitative analysis assesses whether covariances across a large sample accord with theoretical expectations. If the results support the theory, qualitative case studies can be used to test the proposed mechanisms with a greater depth of information, whereas if the results are disconfirming, the case studies can be used for "model-building" to understand why the hypotheses were unable to explain the expected outcome.

[52] The former "asks whether structures of covariance and temporal ordering are generally consistent with a theoretically specified model of influence" and the latter "follows the spread of a policy or practice from one location to another" thereby identifying "why and how a concrete instance of learning or mimicry occurs" (Lee and Strang 2006: 886).

state system from 1959 to 2015. It utilizes an original dataset that has been constructed from a combination of primary and secondary sources[53] and classifies all countries according to their petroleum regime and also develops an original measure of learning based on countries' exposure to different petroleum regimes in international organizations. By employing such a broad sample[54] of countries, this research overcomes limitations of many other studies of policy choice and of oil and gas, which have tended to focus on specific regions or just on major oil producers.[55] It should be noted that, while this approach sheds light on whether certain indicators of diffusion appear to be related to the adoption of petroleum regimes, the analysis does not constitute a direct test of the causal mechanisms and cannot make any claims to causal inference.

Consequently, the analysis is complemented by process tracing, which "involves the examination of "diagnostic" pieces of evidence within a case that contribute to supporting or overturning alternative explanatory hypotheses." [56] It focuses in particular on whether and how hypothesized causal mechanisms are operating in specific circumstances. This study uses primary and secondary sources, archival documents, and interview data in order to gain insights into the operation of the proposed mechanisms in facilitating legal change among policy-makers

[53] For details on the sources used, see Chapter Three, Section Three.

[54] The dataset used in this study constitutes a sample rather than a total population for two reasons. First, there are some countries that could not be classified owing to a lack of information. Second, many of the covariates used for the statistical analysis are not comprehensive, so the final analysis uses a substantially smaller subset of countries.

[55] For a critique of region-centric diffusion studies, see Marsh and Sharman (2008). For examples of major statistical studies of the petroleum industry that exclude small producers and non-producers, see Luong and Weinthal (2006; 2010); Ross (2001); Haber and Menaldo (2012). Although the emphasis on oil producers is sometimes the result of the research question or theory, in the case of diffusion of oil laws, it is important to note that the vast majority of countries do, in fact, possess upstream oil laws even if they have no known reserves and are considered unattractive from a geological perspective.

[56] Bennett (2010: 208). According to Levi and Weingast, analytic narratives and process tracing are related but differ in their emphasis. The former, they argue, emphasizes key actors, interactions, and strategies, while the latter emphasizes key variables and does not require game theoretic analysis (2016: 5).

and their advisors, of the role of domestic actors in resisting or supporting changes, and how understandings of the meaning of a specific law or legal structure changes over time. Historical information is drawn from secondary sources such as histories of the oil industry, as well as primary documents, particularly State Department records located at the U.S. National Archives. While representing only one country's viewpoint, that country represents one of the most significant home countries in the industry and also offers insights into the views of most of the major international oil companies.[57] Complementing these records are semi-structured interviews with a snowball sample of senior members from the international network of oil experts and activists, including consultants, lawyers, engineers, members of non-governmental and of international governmental organizations, as well as private company officials. Given the seniority of interview participants, these data offer both a contemporary and historical perspective on the industry.

5 Research Implications

The argument advanced in this dissertation is that the mechanisms of diffusion that are emphasized in common myths about oil and gas fail to capture the power and agency of host countries. Likewise, the diffusion literature's emphasis on the North as the source of diffusion overlooks the ways in which the mechanisms of diffusion operate differently depending on countries' levels of development and their domestic politics. Developing countries, I argue, tend to choose their oil regimes on the basis of learning and emulation, with domestic politics

[57] These records have already been fruitfully used to study the maintenance of the concession system (Rodman 1988).

determining reference groups. I develop this argument by means of a parsimonious model, which is assessed using quantitative and qualitative evidence. This two-level argument about the relationship between country type and diffusion mechanisms is generalizable to a broader range of cases, whether international or domestic, and offers a first step towards predicting which mechanisms of diffusion are likely to drive change in different circumstances. As a result, this dissertation does more than enrich the discipline's understanding about host country-company relations and control over oil resources, but it also addresses significant emerging areas of diffusion research.

By focusing on the legal structures for petroleum development, this project also answers a call for interdisciplinary research incorporating legal scholarship and policy relevance into political science. As a number of scholars have observed,[58] international relations and international law have been able to improve each others' research on a variety of topics, benefiting from greater "realism" and new perspectives on changing patterns of international relations, including the proliferation of international institutions and regimes. It also responds to a similar call for expanded research on oil politics, which in spite of its significance, has been surprisingly underexplored.[59] This project consciously draws on insights developed across a range of disciplines, including political science, law, and sociology in order to build on the specialized knowledge and insight developed separately in each of these fields.

[58] Slaughter, Tulumello and Wood (1998: 367).

[59] Academic writing on energy has been surprisingly sparse for much of the post-1970s period. Hughes and Lipscy have noted that research on energy politics is "fickle" and top publications in political science have averaged only approximately 0.2 percent since the 1970s (2013: 452).

CHAPTER 2: A TWO-LEVEL DIFFUSION FRAMEWORK

1 The Concept of Diffusion

In 1966, Indonesia upended the existing order of oil and gas governance when it developed a new fiscal regime, the Production Sharing Agreement (PSA). This system transformed the host country from landlord and tax authority to industry participant, asserting sovereignty over a strategic industry. While the practical significance of this shift is debated, its appeal to other countries is not. Over 100 countries have adopted the PSA, making it the leading oil regime in the world. How did the PSA displace the concession, which had served as the near-universal standard for over a century? Why did the service contract – a third alternative – fail where the PSA succeeded? Why, in spite of its apparent appeal, has the PSA failed to extend into the developed world? Although the existing literature on diffusion[60] provides some answers to these questions, it remains limited in its ability to explain when and why some mechanisms of diffusion are more influential than others. This chapter outlines a general approach to understanding the comparative strength of four causal mechanisms of diffusion, focusing on cases, such as the PSA, where innovations emerge in the developing world.

[60] Graham, Shipan, and Volden identified nearly 800 articles on this topic published in top political science journals from 1958-2008 (2013: 673). A similarly expansive literature exists within law, largely under the term of "legal transplants" (most famously employed by Watson 1993, but Ajani 1995; Berkowitz, Pistor, and Richard 2003; Garoupa and Ogus 2006; Mattei 1994; Miller 2003), but also "legal translation" (as outlined by Langer 2004; Brake and Katzenstein 2013; Maman 2006), "legal irritants" (Teubner 1998), and "transnational legal processes" (Koh 1996; Shaffer 2013). Sociology and economics likewise have extensively examined diffusion, "convergence" and "harmonization" (Cao 2009; Holzinger, Knill, and Sommerer 2008), along with isomorphism (DiMaggio and Powell 1983). Although this study draws from all of these literatures, the terms used to describe diffusion are not strictly synonymous and care must be taken when aggregating insights across studies. Differences in terminology often reflect varying assumptions about actors, objects, and processes: mechanical and organic metaphors imply different views about whether object and subject are changed as a result of the process, whether partial diffusion is possible, and whether the process is singular or recursive (Nelken 2001: 16). Depending on assumptions about what makes diffusion or transplantation successful, diffusion may not even be possible (Legrand 2001).

I define diffusion as a process by which full or partial adoption of a policy, law, idea, belief, norm, or institution by one actor affects its probability of adoption by others.[61] This definition has several important features. First, it implies interdependence of decision-making. Unlike functionalist theories, which suggest that similarity of outcomes is the result of independent responses to similar problems,[62] diffusion implies that actors look to and are influenced by others operating within their social structure. Second, it recognizes that diffusion, as a process, need not necessarily result in adoption. Others' experiences might serve as a deterrent, causing diffusion to produce non-adoption.[63] Similarly, this definition sets aside the issue of implementation. Once a policy is adopted, it might not be implemented or enforced. The issue of enforcement, while of great practical significance, is likely subject to distinct dynamics and falls outside of the scope of this research. Fourth, this definition does not assume that the object of diffusion remains unchanged over time, thereby allowing for the possibility of adaptation and recursivity.[64]

Using this definition, the project focuses on the causal mechanisms of diffusion, which, following Zürn and Checkel, are defined as "intermediate processes" that connect "specified

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[61] This definition largely follows that of Strang (1991: 325) and of Graham, Shipan, and Volden (2013: 675).

[62] See Watson (1993: 4) for a critique of functionalist theories of law.

[63] The open-endedness such a definition is discussed in Elkins and Simmons (2005: 37-38). It lies in contrast to much of the contemporary literature on diffusion, which focuses overwhelmingly on dramatic cases of adoption, ignoring the possibility that other countries' experiences might serve as a deterrent. This study avoids these biases while also attempting to account for cases in which diffusion has not occurred – an area of research that has been largely neglected (for a notable exception, see van der Heiden & Strebel 2012). It also refers back to the early diffusion literature, which identified different types of diffusion effects, including inhibitory and demonstration effects (see, for example, Kobrin 1985).

[64] This study therefore views diffusion as an ongoing process rather than an outcome. Recursivity "connotes a multidirectional, diachronic process of legal [or policy] change" in which transnational pressures influence domestic outcomes, which through their adoption and adaptations alter the transnational processes and promote further change (Shaffer 2013: 13-14).

initial conditions and a specific outcome."[65] In essence, causal mechanisms are theoretically developed, testable links within a causal chain that allow researchers to describe both why and how an assumed causal relationship operates. This interest in causal mechanisms is not new: according to Braun and Gilardi, "one of the cornerstones of the policy diffusion literature is the interest in the mechanisms that drive diffusion processes."[66] The study's contribution lies instead in its attempt at understanding propensities: it seeks to identify key factors that encourage diffusion by some mechanisms rather than others.[67] Specifically, this chapter suggests that power asymmetries, peer groups, and domestic elite orientation magnify or diminish the significance of coercion, competition, learning and emulation. By focusing on these factors, it is possible to anticipate which mechanisms are likely to be most influential in different circumstances. Doing so is important for several reasons. First, some authors have suggested that some mechanisms of diffusion result in better outcomes than others: mechanisms that involve careful reflection are more likely to produce optimal outcomes than those resulting from blind adoption, from competition, or from coercion by other nations.[68] If this supposition is correct, then the *process*

[65] Zürn and Checkel (2005: 1049). There is an ongoing debate in political science about both the meaning and value of mechanism-based analysis. As Gerring discusses, there are at least ten different – and often contradictory – understandings of the term "mechanism," relating to observability, level of specificity, level of analysis, and methodological application (2010: 1501). The understanding adopted here is that, by specifying and testing a hypothesized, observable causal chain, researchers are able to provide support for an argument that a relationship is causal rather than merely a correlation. This approach, however, has been challenged as an analytic technique on the grounds that mechanisms can be further disaggregated – even to the point of unobservability (see Bunge 2004: 186, and Bennett and Checkel 2014: 10-11; Hedström and Swedberg 1998: 13) – producing a problem of infinite regress (see King, Keohane, and Verba 1994: 86 and Gerring 2010: 1506).

[66] Braun and Gilardi (2006: 299)

[67] In doing so, this study responds to a growing demand within the literature. Jandhyala, Henisz, and Mansfield, for example, suggest that scholars need to "identif[y] the conditions under which diffusion is likely to be driven by a particular mechanism" (2011: 1048), as do Karch (2007: 68) and Meseguer and Gilardi (2009: 538)

[68] Specifically, Shipan and Volden (2008: 840), argue that "Policy adoption based on *learning* about effective policies elsewhere leads to good outcomes, whereas the negative externalities arising from *competition* can produce

of diffusion is in many ways as important as the *act* of diffusion.[69] Second, an improved understanding of the diffusion process may enable actors with limited resources to more effectively target their efforts to achieve desired cross-border reforms.

Beyond providing a framework for approaching cases of diffusion like the PSA, the study makes two contributions to the literature. First, it places greater emphasis on the role of weak international actors, not just as receivers or resisters of diffusion, but also as innovators and promoters. It thereby challenges the "traditional" emphasis on the North[70] in studies of diffusion. Second, it recognizes that diffusion is not simply a binary adoption decision, but constitutes a choice among multiple options, in which domestic sub-state actors play a critical role.[71]

This dissertation focuses on legal change in the petroleum industry to illustrate the concepts and theoretical expectations of the proposed framework for diffusion. The following section therefore outlines the defining characteristics of the PSA along with those of the competing concession and service contract regimes. This is followed by an overview of the "standard" or "traditional" model of diffusion that dominates the literature. Part 4 conceptualizes the causal mechanisms of diffusion. Because mechanisms frequently overlap in practice,

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bad outcomes. *Imitating* other governments by simply copying their policies may result in inappropriate policy choices. And policy choices based on *coercion* from other governments are unlikely to be optimal." Elkins and Simmons reach similar conclusions about adaptive versus learning mechanisms (2005: 47).

[69] This argument was also made by Berkowitz, Pistor, and Richard as a critique of the law and economic development literature, whose policy recommendations fail to account for the way that different methods of transmission may distort the effectiveness of policies (2003: 166).

[70] This paper uses the concepts of North and South to denote developed and developing countries, respectively. This terminology can be normatively problematic, but is adopted largely in reflection of its common usage in the literature. An alternative term, "diffusion from the periphery" is associated with the work of Langer (2007).

[71] This is not to say that other international actors do not also influence the adoption decision. International organizations can influence decision-making through conditional aid, foreign governments can likewise shape outcomes through incentives and threats, and private actors may influence decision-making in a variety of ways. These different possibilities are raised in the discussion of mechanisms below but will vary based on issue area.

emphasis is placed on distinguishing features. Part 5 describes the role that international and domestic factors play in influencing the relative strength of each of the causal mechanisms of diffusion. It argues that diffusion across the South and the North occurs by different processes owing to variations in the distribution of power and peer groups. Domestic elite preferences further complicate the picture by privileging some mechanisms over others. These factors suggest that diffusion to and within the South – particularly involving outward-oriented states – is facilitated by a wider range of mechanisms than diffusion in the North. Part 6 translates these findings into specific hypotheses about the diffusion of oil regimes. The central argument is that the PSA regime has enjoyed its enormous success not because of coercion – as common myths about the oil industry would suggest – but because of learning and emulation within the South. Part 7 concludes the chapter by exploring implications for policy-makers and academics.

2 Three Petroleum Regimes

The legal regimes of the international oil and gas industry fall into three[72] categories: concessions, PSAs, and service contracts. Although many hybrid forms and variations exist and are subject to change in their content over time, these three regimes capture the major differences in: ownership of oil at different stages of production and export; risk allocation between host

[72] Some academics and practitioners recognize a fourth type, the joint venture (JV) (see, for example, Radon 2005 and BNDES 2009), which involves a mandate that a state-owned or local oil company maintain a minimum share of all oil operations in country. This fourth category is omitted from this study for two reasons. First, the convention in the majority of the literature is to recognize only the three major regime types (see, for example, Johnston 2001; Hermann et al. 2010; Tordo et al. 2010; Van Meurs 2008). Second, and more importantly, the JV structure exists as a supplement to the other regimes rather than as an alternative – minimum state shares are common in all three regimes, and, with the debatable exception of Venezuela (discussed in some detail in BNDES 2009), does not exist independently of the other regimes.

governments and investors; opportunities and mechanisms for dispute resolution; the structure and source of government revenue; and ease of governance.[73] The choice between these systems is of interest both for its practical implications for the oil industry[74] and because the rise of the PSA system represents a dramatic deviation from the standard model of diffusion, as is discussed in Part 3. The following section outlines the key features and geographical distribution of each of the regimes.

2.1 Concessions

The concession, which in this conceptualization includes licenses and leases, was the predominant oil regime from the beginning of the commercial oil industry until the 1990s. Concessionaires are granted the right to explore for and produce oil within a specific area over a fixed time-frame – commonly set around 30 years, with options for renewal – in return for royalties, taxes, and other payments to the landowner.[75] The earliest forms of concession granted companies rights to subsoil reserves as well as production. However, with the exception of private lands in the United States and some parts of Canada, countries have (re)claimed subsoil

[73] For discussion of these differences, see Van Meurs (2008: 13). Notably, he suggests that there is no *a priori* theoretical reason why the government share of revenues should be any different across the three types of ownership structures.

[74] The choice of ownership structure is of critical importance to host countries and, according to prominent industry experts, the history of the modern oil industry has, to a substantial degree, been a struggle over the evolution and implementation of each of these ownership and fiscal structures. Two such histories include Yergin (1991) and Parra (2004).

[75] Because of this emphasis on royalties and taxes, concessions are frequently referred to as R/T systems. For a summary of typical terms, see Parra (2004, 8-9); Tordo et al. (2010: 9). A detailed description of the specific tax and royalty rates on a country-by-country basis can be found in Johnston (2001) and in Ernst & Young (2012). It should be noted that, while early and contemporary concessions largely share the same in structure, the "standard" terms and underlying philosophy have changed dramatically in the post-colonial period.

rights for the state or the people, meaning that title to production passes to the company only at the wellhead.[76]

This question of formal ownership is significant in several respects. First, the party possessing title to the oil is able to take advantage of price upsides, thereby affecting potential returns. Second, ownership influences an important performance metric for publicly traded oil companies: booked reserves. Essentially, booked reserves reflect the future production to which companies have access and serve as an indicator of long-term profitability.[77] Failing to book more reserves than annual production over the course of several years can place a company's viability into question. Based on guidelines set by the U.S. Securities and Exchange Commission (SEC), companies are allowed to report all of the proved reserves in the concession area.[78]

Concessions place all of the exploration and development costs and risks onto the concessionaire,[79] typically in return for relatively low royalties – per-barrel fees on production –

[76] The distinction is partially one of civil and common law. Historically, under civil law, it was common to reserve mineral resources in the subsoil to the crown (or, alternatively, to the state or the people). In this case, the state always held control over the type of oil regime it would permit. The second practice, which was originally found in common law countries, allowed private ownership of the subsoil resources themselves, which means that oil reserves have not always been state property. In effect, this meant that landowners rather than the state could determine the contract or licensing form of their choosing. Owing to the fragmented nature of private ownership, this has in practice led to the use of standardized concession and service contracts, as PSAs would be too costly or complex to implement. However, with the exception of non-state and non-federal lands in the United States and several Canadian provinces, nearly all common law states have come to adopt the civil law model by nationalizing the subsoil in their Constitutions or oil laws. Thus, the theory of ownership has a very limited, localized effect on petroleum regime choice. For a discussion of ownership of subsoil, see McHarg (2010: 130, 210) and Taverne (1999: 141).

[77] Herrmann et al. (2010: 110)

[78] This may be reduced in cases of government participation or shared ownership.

Proved reserves refer to reserves of oil or gas that are technically and economically recoverable with a probability of 90 percent. Proved reserves therefore do not represent fixed quantities and may fluctuate independently of production rates.

[79] Concessionaires include privately held oil companies, publicly traded oil companies, and foreign or domestic national oil companies. Countries will typically outline minimum requirements for concessionaires, and some

and income taxes.[80] Subject to environmental, conservation,[81] and market regulations, operators tend to have full discretion over exploration and development activities. They are frequently able to sell all or part of the concession to other qualified parties, making the concession system a market-oriented regime. The government role is largely that of a regulator and tax collector rather than as an industry participant. This limited role is one key reason why concessions are typically regarded as relatively straightforward to administer and also most favorable to companies.[82]

While most modern concessions, such as those in the United Kingdom, Norway, Colombia, and Thailand, are awarded via competitive auction, historically they were either directly negotiated or inherited from colonial administrations at a time when oil companies held overwhelming market power. Early concessions, such as the D'Arcy concession in Persia, could include nearly the entirety of a country's territory, with little or no host country supervision or control of oil prices, and could extend for as long as a century. In many parts of the world, such concessions came to be viewed as an affront to national sovereignty and a form of imperialism. The tremendous power asymmetries enshrined in early concessions contributed to a nationalist backlash in the 1960s and 70s, during which concessions were widely renegotiated or

countries historically have given nationality preferences, excluded companies from certain countries, or banned investments by foreign state-owned companies, but many of these restrictions have loosened over time.

[80] These upfront costs are offset at least in part by tax deductions for projects that enter into production.

[81] Historically, "conservation" in the oil industry refers to conservation of reserves rather than of the natural environment, and reflects the fact that petroleum is an exhaustible resource and that production practices can dramatically affect the percentage of reserves that can be recovered from a field. Conservation rules include mandatory or voluntary unitization, well spacing, and other regulations designed to optimize the resources that can be extracted from a reservoir.

[82] See Vivoda (2009: 2). Compared to PSAs, tax calculations and audits under concessions tend to be relatively straightforward. Moreover, concession contracts tend to be less encompassing than PSAs and easier for the host country to adjust after implementation, and therefore require less expertise on the part of government experts at the award stage.

nationalized. As a result, the very term "concession" is frequently described as an "embarrassment" and "emotional[ly]" laden, a "dirty word," "politically incorrect," or politically unacceptable.[83] In its most recent auction, Mexico felt compelled to avoid using the term "concession" in describing an offering that substantively conformed to that system. In spite of its politicized history, the concession remains an important form of legal regime in the petroleum industry. Nearly all members of the Organization for Economic Cooperation and Development (OECD)[84] maintain the concession system and it remains common in many other regions, particularly Latin America.

2.2 Production Sharing Agreements

Also called production sharing contracts (PSCs), PSAs emerged in Indonesia in the 1960s in response to an oil law that claimed ownership of the subsoil for the people and effectively prohibited concession agreements. This form of contract was designed to assert state ownership of the resources in the ground and to give the state a chance to learn about the industry through partnership with the private sector. Under a PSA, the state owns the resources in the subsoil and retains ownership of produced oil until it reaches a destination fixed in the contract – typically, the point of export – at which point the contractor assumes ownership of a percentage of production.[85] This percentage is made up of two parts: cost oil and profit oil. Cost oil, a subject of intense negotiation, represents the annual reimbursement to the contractor of development and

[83] Interviews with a senior energy lawyer (December 2014, Washington, DC), former lawyer in international organization, interview (December 2014, Washington, DC) and energy legal consultant (Skype interview, June 2015). See also Parra (2004: 8) and Wood (2008: 65).

[84] The two exceptions are Greece and Mexico, where concessions co-exist with PSAs, with each being applied to different areas, although in Mexican concessions go by another name (Author's data). See also Wood (2008: 65).

[85] Tordo et al. (2010: 10).

operating costs. Profit oil is divided between the contractor and host government, typically on a sliding scale that favors the state in high price environments.[86] In addition, PSAs often also impose royalties and income taxes.[87] The structure of cost and profit oil has led some experts to criticize PSAs, arguing that they carry little incentive for companies to control costs, an issue that has led to tension in a number of countries.[88]

Under SEC rules, contractors are able to book their share of production,[89] making PSAs attractive to publicly traded companies. Nevertheless, on average the terms are less favorable to the contractor than those offered under concessions.[90] Along with sharing production, the state also shares some risk with the contractor. While the state does not generally face any exploration risk, it is exposed to risk at the production stage through the mechanism of cost oil. In addition, many PSAs require national oil company (NOC) participation, which can expose the state to operational risk.

PSAs, such as those found in China, Malaysia, Tanzania, and Angola, are typically negotiated from model contracts, but individual terms will vary from deal to deal. PSAs commonly include arbitration clauses, giving the contractor additional recourse in the event of a

[86] Herrmann et al (2010: 110).

[87] For a detailed analysis of the structure of PSAs and their economic consequences over more than 260 contracts, see Bindemann (1999).

[88] One prominent case of such conflict is the Kashagan field in Kazakhstan, which was developed under a PSA that was renegotiated for reasons of environmental concern and cost overruns (Daly 2014). This project, which is reportedly "the most expensive oil project in the world" remains under development and is expected to begin production with nearly a decade of delays and $30 billion in cost overruns. Total project costs are expected to exceed $50 billion (Stafford 2015).

[89] According to Wood (2008: 83), this share would typically be less than that booked under a concession.

[90] Johnston (2008: 4) estimates that the IOC entitlement to physical production is approximately 90% in a typical concession and 50-60% in a PSA. In an earlier study, Johnston also found that tax rates in PSAs are typically higher: average government take is 70% in PSAs and 59% in R/T systems (2001: xlvii).

dispute, and sometimes subject the agreement to the laws of another country. Some PSAs carry clauses that freeze the contract terms,[91] meaning that the state may not subsequently change its levels of taxation and may even exempt the project from subsequent changes to environmental or other regulations. These features make PSAs extremely flexible instruments, but also demand that the state possess high levels of technical and legal expertise at the negotiation stage. Similarly, because the state typically assumes a greater level of oversight and may be a partner in the development, it must also possess a capable and technically trained bureaucracy in order to implement and monitor the contracts. While the need for expertise is part of its design – the authors of Indonesia's early PSAs strongly emphasized the concept of "learning by doing"[92] – it also raises questions about whether the PSA is truly suited to countries with low governing capacity or little experience in the oil industry.[93]

When initially introduced, PSAs were strongly resisted by international oil companies, which characterized them as a form of nationalization. However, following complete nationalization in Iran, Iraq, and elsewhere in the Middle East, the PSA came to be viewed as a more favorable alternative to nationalization. The first PSA was signed in Indonesia in 1966, with countries throughout Asia and Africa soon following its example, including Egypt in 1969, Libya in 1974, and Angola in 1975.[94] By the 2000s, PSAs overtook the concession as the most common fiscal regime in the world.[95] This regime is particularly common in large offshore

[91] These are referred to as stabilization clauses.

[92] Fabrikant (1973: 475).

[93] As stated by Radon, the PSA "puts a premium on very professional negotiations and the government having access to technical, environmental, financial, commercial, and legal expertise" (2005: 70).

[94] Wälde (2008: 63).

[95] See Johnston (2001).

projects where the state seeks to capture a greater share of the gains, for reasons discussed in Chapter 4.

2.3 Service Contracts

There are a number of types of service contracts, from risk service contracts (RSCs) to technical service agreements (TSAs), and the Iranian buy-back contracts. The common feature of service contracts is that they take a fee-for-service approach, with contractors either being paid a lump sum, a per-barrel fee for production, or some share of profits. Such "services" may be quite extensive, going so far as to cover exploration, development, and production of a field. Contrary to the alternative regimes, contractors are not entitled to ownership of any of the oil.[96] As a result, they cannot book any reserves, making this system unappealing to publicly traded oil companies.[97] Under service contracts, the government gains the entire price upside, but also takes on greater liability for project development and operations. As a result, service contracts can be difficult for poorer countries to implement, especially if they need to raise financing against unproven reserves.

The service contract regime – in the sense of full state ownership with no private equity participation – was the primary alternative to the concession prior to the development of the PSA. Because of the service contract's relative unattractiveness to oil companies, it is extremely rare for countries to rely exclusively on this system. Those countries that do use it – such as Iraq

[96] McHarg (2010: 211). This issue of reserve bookings was a significant issue in Iraq's fiscal design following the overthrow of Saddam Hussein. Drawing on interviews with private oil company representatives, Coll describes the priorities and processes by which ExxonMobil and other international companies lobbied the Iraqi government to permit PSA-like structures (2012: 560-565).

[97] NOCs do not face the same pressures for reserve bookings and may be less affected by this particular feature. As a result, the rise of NOCs operating internationally may affect adoption rates for this regime in the future.

(excepting the Kurdistan region) and pre-2015 Mexico[98] – are generally mature producers with national oil companies possessing the technical expertise and material resources to manage domestic production with limited outside assistance.

2.4 Comparing Petroleum Regimes

For the purposes of the following theoretical discussion of diffusion, three factors are of particular importance when comparing oil and gas regimes: origin, company preference, and normative associations. Origin refers both to the actual origin of the system and its perceived suitability for a particular type of country. Company preference refers to the preferences of international oil companies, both directly expressed and as perceived by other industry participants. Normative associations describe the image and ideology with which particular regimes tend to be associated.

TABLE 1. COMPARISON OF PETROLEUM REGIMES

	Origin	**Company Preference**	**Normative Association**
Concession	North	Preferred in stable countries	Free Market
Production Sharing Agreement	South	Preferred in unstable countries	Market Nationalism
Service Contract	South	Opposed	State Nationalism

[98] Based on its constitution, Mexico shifted to a service contract regime in 1938, when it nationalized the industry. However, in practice, several private companies were able to operate in the country until the 1950s (McHarg 2010).

As outlined in the preceding sections and explored in Chapter 3, concessions represent the legal tradition of the North. Historically as well as contemporaneously, concessions are the system of choice among developed countries, regardless of their resource potential. PSAs, in contrast, are strongly associated with the South in origin and distribution. They originated in the developing world in response to issues that were of great concern to newly independent countries. The intellectual origins of service contracts are less clear, but the regime can only be found in the South and is therefore considered a Southern regime for the purposes of this discussion.

Given the industry's diversity – including state-owned, publicly-traded, and privately-held companies in a wide range of sizes and national origins – it is difficult to draw clear conclusions about companies' preferences. However, some inferences can be made based on the characteristics of the regimes themselves, their reception, and statements made by industry participants in the North. First, any profit-oriented equity investor– whether state-owned or from the private sector – will tend to prefer concessions and PSAs to service contracts by virtue of reserve bookings [99] and upside price exposure. Among these two systems, however, the preference ordering is somewhat ambiguous. On the surface, oil companies would be expected to prefer concessions for their higher level of company take and managerial discretion. However, highly asymmetrical deals tend to undermine contract stability and thus concessions may not necessarily be advantageous in the long run. PSAs carry additional dispute resolution safeguards, which can further increase their desirability in countries perceived as more risky. In general,

[99] Preference for reserve bookings is limited to publicly-traded oil companies, as opposed to privately-held oil companies like Hunt Oil, private equity investors active in the upstream, or oil service companies like Schlumberger and Baker Hughes. Some national oil companies are at least partially listed on stock exchanges and may also care about reserve bookings, but this is typically a lesser concern among NOCs.

companies are accustomed to and comfortable working with both regimes, exhibiting a slight preference for concessions over PSAs except in countries perceived as highly unstable where the additional safeguards of the PSAs offset the advantages of the concession.[100]

While ensuring adequate levels of investment is a key concern for countries adopting new petroleum laws, oil companies are not the only stakeholders. Oil regimes send important messages to political constituents and other countries about a government's attitudes and responsiveness to its people. Accurately or not, oil regimes tend to be associated with different ideological leanings or priorities reflecting the appropriate role of government in collecting and allocating petroleum revenues. Concessions tend to be associated with a free market or neoliberal perspective, seeking to maximize investment under the supervision of the government. Adoption or maintenance of a concession regime therefore signals openness to foreign investment and foreign capital in general. PSAs, in contrast, are historically associated with nationalism,[101] expressed through greater state or NOC participation[102] and attempts to increase revenues from production. They expand the number and type of direct and indirect claimants to oil revenues, especially expanding the role of government elites.[103] However, they continue to rely on private

[100] In-person interviews between author and industry consultant (December 2014), Washington, DC; former lawyer at an intergovernmental organization (December 2014), Washington, DC; finance professional specializing in energy (June 2015), Houston, TX; energy lawyer (July 2015), New York, NY; energy specialist at a non-governmental organization (July 2015), New York, NY; petroleum engineer and economist (July 2015), Houston, TX; and Skype interview with an oil company negotiations expert (August 2015).

[101] Although "resource nationalism" is frequently used synonymously with expropriation, nationalism here is understood in more broadly as representing a policy of asserting greater national responsibility and control over the oil industry in response to societal demands, frequently originating from colonial experiences.

[102] See, for example, Abdelal (2001: 178-179), who describes the period during which the PSA was developed in Indonesia as one of purposive nationalism directed at achieving "equity and independence from Dutch capital and Western capitalism in general," which in this case demanded national ownership and participation.

[103] Luong and Weinthal (2010: 11) argue that ownership structure and its effects on the relationship between direct and indirect claimants to revenues is critical to determining the consequences of the resource curse.

and foreign actors, maintaining a market-based approach to the resource sector. Service contracts, with their eschewal of private ownership, reflect a more state-centric nationalism in which government control over operations and revenues is nearly absolute and may come at the expense of efficiency or investment. These three features are revisited throughout the following discussion of causal mechanisms to develop hypotheses about the most likely mechanisms of diffusion in this case, which are elaborated in Section 6.

3 The Standard Case of Diffusion

According to Twining, in its most basic or "naïve" conceptualization, legal diffusion entails a one-way, state-to-state transfer of law from an "advanced" sending country to a less developed receiving country, in which diffusion "success" is defined as wholesale formal adoption in the recipient country at an identifiable moment in time.[104] Watson presents a similar set of assumptions about legal transplantation, noting that transplants nearly always "involve[] a change in the law"[105] and are easier when the recipient is "much less advanced materially and culturally."[106] Within political science, world systems theory, Marxism, neo-realism, and many constructivist theories likewise suggest that central countries tend to dominate the periphery.[107]

Although there are certainly studies – particularly among the regional and subnational diffusion literatures – that illustrate that diffusion may occur in the absence of center-periphery

[104] In total, Twining outlines twelve characteristics of the naïve diffusion case along with variations found on each of those characteristics (2005: 205-207; 2004: 3, 17).

[105] Watson (1993: 97).

[106] Watson (1993: 99).

[107] See Kim and Barnett for a discussion of center-periphery structures in the telecommunications field (2000: 117), and Langer for a more general account of center-periphery accounts of diffusion (2007: 620-622).

dynamics, several authors have noted a Northern bias in the diffusion literature.[108] As a result of this bias, developing countries tend to be portrayed as passive recipients of advancements in developed country laws, which serve to fill gaps or improve efficiencies in developing country law. Even among studies that acknowledge agency among developing country actors, there is a tendency to focus on innovations originating in the developed world. Thus, Dezalay and Garth's discussion of legal "palace wars," which recognizes the importance of domestic elites, nevertheless emphasizes Europe and the United States as exporters of legal ideas, with comparatively little discussion of legal innovation within Latin America itself.[109]

This Northern bias is increasingly recognized as both empirically and theoretically problematic. On the empirical side, Langer's work on the diffusion of criminal procedure and plea bargaining across Latin America finds that, while both peripheral and central actors play a prominent role in a transnational advocacy process, agency rests primarily in the periphery.[110] Weyland similarly finds that, contrary to expectations, financial institutional change in Bolivia is driven more by domestic requirements and preferences than by international institutions' conditionality requirements.[111] On the theoretical side, Marsh and Sharman have suggested that coercive transfer from core countries or international institutions are likely to be particularly

[108] For example, Simmons et al. suggest that some mechanisms of diffusion have tended to be associated with center-periphery dynamic, stating that, "Coercion theorists suggest that policies diffuse from the "center"" (2008: 10). Within the legal literature, see Towns (2012: 181, 183), Marsh and Sharman (2009: 280), and Langer (2007: 622).

[109] See Dezalay and Garth (2002). While the authors do not emphasize the ideas originating in the South, it should be noted that they do recognize the role that the South can play in influencing the North. In particular, examining the role of experts and judges, the authors suggest that the choices of the South influence which group of Northern countries dominates specific fields, thereby playing an important role in "the transatlantic competition between hegemonic societies" (Dezalay and Garth 2010: 128).

[110] Langer (2004, 2007).

[111] Weyland (2005).

effective in the periphery, competition is likely to be more powerful among developing countries, and developing countries are likely to choose developed countries as objects of emulation. Alternatively, some regions may be particularly resistant to diffusion from the center.[112]

Another important feature of the traditional model is that it tends to be binary and non-recursive: importing countries are presented with one policy option and either choose to adopt or reject it. Alternative policies, partial adoptions, or adaptations of the given policy are rarely considered, particularly in quantitative studies of diffusion. Yet, as Brooks has pointed out, "it is more common that *multiple* alternatives are available from which policy makers may choose."[113] Countries must determine not only which policy to adopt, but also how much to adapt it to the local context. Those experiences may produce changes in the initial exporting country through competition, learning, or changes in the legitimacy of the policy itself.[114] Finally, the traditional model tends to neglect the role of domestic politics in diffusion.[115] Sub-state actors can play an important role as advocates or resisters of policy change, and their political strength can influence the choice of policy alternatives.[116]

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[112] Marsh and Sharman (2008: 280-281).

[113] Brooks (2007: 701). Twining similarly argues that "no serious student of diffusion can assume that what is borrowed, imposed or imported *remains the same*" (2004: 24).

[114] This recursive process may exist at both the international level as well as at the domestic one. Teubner proposes to discuss legal transplants in terms of legal irritants, suggesting that changes to the imported law and the entire national system of laws are inevitable owing to legal interpretation and social meaning (1998: 12, 28).

[115] Graham, Shipan, and Volden (2013)

[116] This point is made by Morgan, who proposes "integrating political dimensions at two levels […] The first level is that of contingent events at the macro level […] At a related, but more micro level, the political context in each country varies, particularly the strength of the social groups the transactional model of regulation promoted by the dominant transnational epistemic community" (2013: 181). Nelken likewise points to the importance of networks and "sites" over states as key actors in the diffusion process (2001: 32).

4 Causal Mechanisms

According to Graham, Shipan, and Volden, political science alone has generated 104 terms to describe the mechanisms of policy diffusion.[117] Further mechanisms might be discovered through related scholarship, such as the social movements literature.[118] Although some differences remain, these terms largely coincide with four concepts: coercion, competition, emulation, and learning.[119] The mechanisms outlined below may be thought of as ideal types,[120] and may be somewhat narrower than other common conceptualizations. Wherever possible, I attempt to discuss deviations from alternative perspectives. Although certain features are readily distinguishable in theory, in many actual cases of diffusion, the categories are overlapping and interactive, rarely occurring in isolation or in their purest form.[121]

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[117] Graham, Shipan, and Volden (2013: 690)

[118] Given the role of policy entrepreneurs in legal transplants research (Langer 2007), the mechanisms by which domestic activists connect internationally to initiate policy change may also be relevant beyond the government-to-government connections emphasized by the four mechanisms discussed below. Some of the most common social movement mechanisms are those of brokerage, certification, modeling, and institutional appropriation (Tarrow 2001: 15; Tarrow 2013: 30-31). However, scholars have shown interest in broadening the set of mechanisms to reflect new developments and innovations, leading to the addition of social appropriation, boundary activation, identity shift, and escalation (Tarrow 2013: 36-37), and even diffusion itself (Tilly and Tarrow 2015: 199). Social movements research has also identified such patterns as cascades that have informed research on norms diffusion. For the sake of drawing testable implications, this dissertation opts to limit the range of mechanisms to the most commonly identified set of four, but expansions beyond these mechanisms could prove fruitful in future research, particularly as a broader set of mechanisms may help better differentiate across categories or shed light on issue areas not adequately addressed using this framework.

[119] While these four terms represent the most common descriptors in the literature, certain alternatives are also highly prevalent and worth noting at this point: emulation may also be described as imitation or socialization (though there exists some debate about whether these alternatives are strictly synonymous, as discussed by Karch 2007: 60); and learning may also be described as policy or legal entrepreneurship or as the product of epistemic communities, which are discussed below.

[120] The development of such ideal types follows an approach proposed by Weber (1978) as a means of offering conceptual clarity. Ideal types do not represent a perfect reflection of reality but are constructs designed to facilitate comparison.

[121] This point is made by Miller (2003: 845-855), who uses an alternative terminology but describes similar mechanisms as those in the political science literature. He suggests that pure forms are rare in part because individuals supporting the transplantation or diffusion process do not clearly separate them in their actions and

4.1 Coercion

Coercion is defined as the conscious application of punishment and rewards to change the payoffs of a particular course of action for another actor. Coercion is facilitated by power asymmetries: the stronger actor can more easily manipulate the weaker one by taking advantage of superior resources.[122] This is not to say that coercion cannot work both ways: as Hirschman's work on international trade suggests, asymmetric degrees of dependence may give a weaker country greater negotiating power than aggregate statistics might suggest.[123] Issue prioritization can also lead weaker actors to more aggressively mobilize resources – either alone or in concert – to wield disproportionate coercive power.[124] Weak states are also known to use international institutions and legalization to limit the behaviors of more powerful ones,[125] while companies

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motivations (850). Meseguer and Gilardi similarly point to the overlapping nature of many causal mechanisms, although their observation is presented more as a critique of the literature rather than as an inherent part of the conceptualization of these mechanisms (2009: 529-530).

[122] The emphasis on power asymmetries is widely adopted in the diffusion literature. One example is Simmons et al. (2008: 10), who state that "The underlying logic of coercion thus involves power asymmetries that strong actors exploit to impose their preferences for policy change on the weak." See also Shaffer, who states that "Only states in structurally weaker positions are subjected to mechanisms of economic coercion" (2013:40). Franzese and Hays similarly suggest that coercion "encompasses a generally vertical pathway by which the powerful induce actions among the weaker" (2008: 745). However, most discussions appear to understand this type of power as a stock – focusing on size or resources of a country – rather than as a flow, which is a more accurate measure of power when examining specific interactions. This difference in conceptualization in the diffusion literature reflects the broader international relations debate between the relational and structural power perspectives (see Baldwin 2013: 274-276).

[123] Hirschman (1945 [1980]: 15-18). In addition to the direct threat of cutting off supplies, in an asymmetric trading relationship, the dominant country is able to wield substantial coercive power over the more vulnerable state, and may also exert influence, leading the smaller trading partner to align its interests with those of the dominant state (Abdelal and Kirshner 1999: 120; Gilpin 2001: 81; Keohane and Nye 1977: 11). While it is common for the materially more powerful state to also be the advantaged state in an asymmetric trading relationship, this need not be the case. For example, in the oil trade, Saudi Arabia and other major oil exports wield market power that far exceeds their military or economic resources and gives them more leverage than a simple North/South dichotomy might indicate (Handel 1990: 231).

[124] The question of issue prioritization is discussed by Hirschman in the context of Latin American relations with the United States, where the level of political involvement affected policy outcomes (1945 [1980]: x).

[125] In fact, "traditional legal scholars generally agree that legalization aids weak states," because hard and soft law can circumscribe strong actors' behavior in areas in which the weak states may not have much power otherwise. At

have successfully used legal contracts and international institutions like the International Centre for Settlement of Investment Disputes (ICSID) to protect themselves from states. Apart from benefiting from asymmetry, a second core attribute of coercion is that it takes place as a result of actual or anticipated action on the part of the coercer, thereby giving agency to the powerful. Where the costs or rewards are not considered credible or are not sufficiently large to change the weaker actor's payoffs, coercion will not be successful. Third, coercion is unidirectional. Adoption or promotion of a policy or law in the receiving state does not subsequently alter the likelihood of policy change in the sending one.[126] Finally, coercion as conceptualized in this chapter involves intentionality on the part of the coercer. As such, coercion largely coincides with what Barnett and Duvall have termed compulsory power,[127] by which power is wielded directly in interactions between specific actors.

One of the most dramatic cases of coercion is "Operation Ajax" in Iran,[128] the CIA-backed coup of 1953. This action was prompted by the nationalization of the Anglo-Iranian Oil

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the same time, however, because powerful actors have greater control over the content of those laws, they may be able to shape them so as to benefit themselves (Abbott and Snidal 2000: 447-448).

[126] For example, if a country were to forcibly change the pension system in another country, doing so would not change its propensity to change its own system.

[127] It should be noted that there are some differences between the definition of coercion presented here and that of compulsory power identified by Barnett and Duvall. Contrary to the characteristics outlined above, Barnett and Duvall suggest that compulsory power does not require intentionality (2005: 50). Moreover, their definition relies heavily on Dahl, whose three characteristics of power also differ somewhat from those presented above: Omitting the characteristic of unidirectionality, Dahl instead emphasizes the importance of a conflict between actor preferences. According to him, compulsory power exists when actor A attempts to influence actor B into taking an action that actor B would not otherwise do (Barnett and Duvall 2005: 49).

[128] Another well-discussed and dramatic case of coercion is that of colonial imposition. Legal origins in terms of common and civil law have, in most cases, been determined by the legal systems of colonizers and have had consequences for the development trajectory of former colonies.

Company (AIOC) and subsequent failures of an oil embargo and diplomatic efforts.[129] The CIA and MI6 supported the Shah of Iran in overthrowing Prime Minister Mossadegh in what was characterized as a counter-coup.[130] AIOC was – in a reconfigured form – permitted to reenter the country.[131] In this case, two powerful Western countries mobilized substantial covert resources against a weaker developing country in order to force policy change. The action had no subsequent effect on U.S. treatment of foreign investors, although it did have long-term reputational consequences and placed pressure on American oil companies to enter the Iranian market.[132] Combining asymmetry, credibility, unidirectionality, and intentionality, this case thus exhibits the four typical characteristics of coercion, in which the concession diffused to Iran and reduced the probability of nationalization among other states.[133]

Coercion need not, however, always entail the use of overt or covert force,[134] nor – as implied above – is it limited to state actors. Coercion may be used by international organizations, corporate actors, and other groups or individuals. Foreign aid or international loan conditionality may demand specific reforms within recipient countries. In Chad, for example, multilateral

[129] Yergin (1991: 466) argues that, in spite of the severe costs of the embargo, Mossadegh's popularity made it impossible for the Shah to reverse Iran's policy.

[130] Yergin (1991: 467-470).

[131] As Turner notes, the coup was instigated by the home governments rather than the companies, although the latter did benefit from renewed access to the Iranian market (1983: 73)

[132] Yergin (1991: 470).

[133] Kobrin (1985).

[134] Looking only at hard forms of coercion, Owen identified 198 cases of a "*forcible* domestic institutional promotion" between states over the period from 1555 to 2000, including the imposition of specific religious institutions, political regimes, or economic systems. (Owen 2002: 375, 396). Shaffer points to the importance of coercion to legal diffusion in Roman, Napoleonic, and colonial periods (2014: 41). Softer forms of coercion include the use of conditionality requirements by international financial institutions or the use of market power by corporate actors to punish countries for undesirable policies. Lipson suggests that there is a greater reliance on such softer forms of coercion as the costs of overt intervention "have risen markedly for all advanced capitalist states" in the post-World War II period (1985: 151).

financing for the Chad-Cameroon oil pipeline was provided only after the government conceded to a revenue management program that severely restricted its discretion in using oil revenues.[135] Investors might play countries or sub-national units against each other to extract investment incentives when siting new projects, as in the case of Brazil, where the states have reportedly entered into "fiscal wars" in which they offer rebates of the value-added tax or other exemptions.[136] Yet, in spite of its frequent application, coercion rarely serves as the "leading mechanism" in the diffusion process.[137] The application of overt coercive pressures may engender resistance, reducing the likelihood that diffusion leads to adoption.[138] Finally, although not a focus of this chapter, it should be noted that coercion also has a complex relationship with implementation. Coercively diffused policies, particularly when imposed on an alien culture, are less likely to be successfully implemented.[139] Coercion is therefore a powerful, but limited, means of spreading policies across countries.

[135] The Chad-Cameroon Pipeline project also exhibits the limits of such arrangements: once construction was complete, there were frequent conflicts between the government and donor organizations and the Chadian government eventually prepaid its loans and withdrew from the confines of the agreement (Mitchell 2010).

[136] Thomas (2010: 114). For this and other reasons, the benefit of investment incentives is increasingly questioned as a development tool.

[137] This point is made by Marsh and Sharman (2009: 272), although this is not a universal view. Mattei, writing on imperial law, has suggested "that force, in the form of international enterprises under U.S. leadership, is still the most important instrument for imposing the hegemony of Western values" (2003:399). Similarly, Miller, describing the "Externally-Dictated Transplant" as "all transplants whose acceptance is motivated by a desire to please foreign states individuals or entities – whether in acquiescence to their demands, or to take advantage of opportunities and enticements that they offer – many different situations involve this type." (Miller 2003: 847).

[138] Similarly, Miller suggests that coercion and adoption are not necessarily linearly related, so the most easily observable attempts at coercive diffusion may not actually be the most powerful instances (Miller 2003: 874).

[139] Berkowitz, Pistor, and Richard (2003: 168). See also Shaffer (2013: 41).

4.2 Competition

The competitive mechanism[140] emphasizes interdependence among actors and resulting direct and indirect changes in their payoffs. Directly, interdependence can produce policy change through the risk of economic losses from non-adoption or promised cost-savings from adoption.[141] Indirectly, interdependence exposes countries to externalities from others' policy decisions, engendering adaptive policy change.[142] Likely outcomes and market pressures are typically assumed to be sufficiently self-evident that competition is distinct from learning or coercion.[143]

Competition is both asymmetric and unconscious. Its pressures are felt regardless of the distribution of power, and the choices of the sending actor need not be directed at the receiving actor – the sender may not even be aware of its impact outside of its borders. Instead, competition is marked by three features: First, it takes place through a diffuse, decentralized market mechanism.[144] This market need not be commercial, but can be ideational. Democratization and human rights reform, for example, have the potential to produce externalities in other countries, as evidenced by the color revolutions in Eastern Europe and the

[140] An alternative term commonly used for competition is *harmonization*, which tends to focus on more normatively desirable policy changes. For a discussion of harmonization, see Stone (2001: 7).

[141] In Miller's typology, the closest equivalent to "competition" as a mechanism of legal transplants is the "cost-saving transplant," which explains borrowing as the result of a desire to save time and experimentation (2003:845).

[142] The reference to externalities emerges in Braun and Gilardi (2006: 299-300).

[143] Simmons, Dobbin, and Garrett thus describe competition as "mechanistic," stating that "Competition theorists assume that the pressure from a change in a competitor's policy so clearly indicates the range of plausible responses that whether and how governments learn about liberalization […] has no independent explanatory power" (2008: 23).

[144] See, for example, Brake and Katzenstein, who state that "competition, typically operates in a less hierarchical and more decentralized manner" (2013: 746).

Arab Spring, which created incentives for other states to "diffusion-proof" their societies.[145] Second, as more sophisticated competition theories propose, pressures for policy change vary across actors. As Keohane and Nye observe, the effects of policy changes among interdependent actors vary according to individual countries' sensitivity and vulnerability, resulting in differences in the speed and magnitude of resulting policy changes.[146] Key competitors, characterized as countries with similar market positions,[147] are more influential in inducing competitive change.[148] Thus, Ireland's government take on oil production, which was below 30 percent in 2008, had little effect on Libya's 80-90 percent government take given the vast differences in their oil production potential.[149] Third, competition is recursive. A change in policy resulting from competition generates new externalities and reconfigures the market for prior adopters (and non-adopters). As a result, competition can generate spiraling behaviors such as a "race to the bottom" in labor or environmental standards.[150] Based on this characterization, competition is most closely associated with what Barnett and Duvall term institutional power.[151]

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[145] Koesel and Bunce document such diffusion-proofing in China and Russia in response to these two waves of mobilization (2013).

[146] According to the authors, "Sensitivity involves the degree of responsiveness within a policy framework" (1977: 12) while vulnerability refers to "the relative availability and costliness of the alternatives that various actors face (1977: 13).

[147] Cao uses this observation to argue that, from a network perspective, countries with "position similarities" or structural equivalence are more likely to experience competition (2010: 824-825).

[148] This point is also made in Simmons et al. (2008: 20-21).

[149] Government take figures for select countries can be found in Johnston (2008).

[150] There have also been cases of race-to-the-top behavior in environmental regulations, such as within the United States, where California's changes in emission standards led to improvements in multiple U.S. states (Holzinger, Knill and Sommerer (2008: 561).

[151] According to the authors, "Institutional power exists in actors' indirect control over the conditions of action of socially distant others" (Barnett and Duvall 2005: 48). Neither actor directly controls the institution – in this case, the market – and both actors are spatially or temporally separate (2005: 51). One important dimension of institutional power is its role in creating and maintaining hierarchies (2005: 52).

Competition works by altering actors' current or prospective payoffs by increasing benefits or reducing costs. The oil industry is a useful source of examples for both benefit-seeking and cost-avoidant competitive pressures, particularly among marginal producers. On the benefit-seeking side, the widespread use of hydraulic fracturing and horizontal drilling in the United States since 2008 has served as an inspiration for others. Following the U.S. example, countries seeking to benefit from similar developments, such as Argentina and Poland, have been working to rewrite their oil laws to facilitate adoption of similar technologies, so far with limited success. On the cost-avoidant side, the pressures of nearly four million barrels per day of additional oil production in the U.S. have driven down prices and reversed the tide of resource nationalism.[152] Frontier countries and high-cost producers, in particular, feel compelled to offer more generous terms in order to maintain or attract investment.

4.3 Learning

I adopt Levy's definition of learning as "a change of beliefs (or the degree of confidence in one's beliefs) or the development of new beliefs, skills, or procedures as a result of the observation and interpretation of experience."[153] Learning may occur as a result of new information about positive or negative examples.[154] The content of those lessons – and whether

[152] For an estimate of the oil production change and contribution of hydraulic fracturing, see Prince and Tovar (2015).

[153] Levy (1994: 283). It should be noted that this definition does not specify the decision-maker's objective. Recent research has questioned whether policy-makers seek to learn in order to improve policy efficiency or to improve their personal electoral outcomes, which may result in different lessons being drawn, with correspondingly different policy responses (see, for example, Meseguer and Gilardi 2009: 533 and Nicholson-Crotty 2009: 194).

[154] Brooks and Kurtz (2012: 99) describe these as cases of positive and negative learning, stating that, "Where positive learning (from success) is in play, governments should enact a policy in which previous adopters have achieved some measurable success following its implementation, such as stronger growth. Conversely, with negative learning they should avoid decisions by countries that subsequently perform poorly."

or not the lessons are even communicated – may vary across countries or even individual policy-makers. A recent example pertains to a U.S. Environmental Protection Agency report on the consequences of hydraulic fracturing (fracking) on drinking water, which was interpreted by policy advocacy groups on both sides of the issue as supporting their views.[155] Ideology and advocacy by non-state actors can further affect the learning process, as can the availability of information. Learning might also be complicated when sources of information, such as international consultants or experts, themselves suffer from biases or follow particular preferences. Beliefs are most likely to change when information or experience comes from "relevant," "validated" or "in-group" actors. In this case, relevance is typically defined in geographic, cultural, and economic terms, but can also vary by issue area.[156] Thus, Norway's policies on natural resource funds are likely to receive greater consideration in Mexico than its policies on immigration. Cognitive psychology also suggests that learning is most likely to follow recent policy failure or heightened uncertainty.[157] Overall, the definition adopted here reflects a boundedly rational rather than a fully rational understanding of learning. [158] In other

[155] On the anti-fracking side, the Sierra Club, for example, concludes that the report "confirm[s] what so many already knew; fracking presents a clear and present threat to our water, our public health and our communities" (Berman 2016). On the pro-fracking side, Energy in Depth, which is associated with the Independent Petroleum Producers Association of America, an industry lobbying group, concludes that, "Not only did the EPA NOT reverse course, its claim of "data gaps" was essentially an admission that after six long years it couldn't turn up a shred of evidence proving the oft-repeated activist claim that fracking is an inherent threat to drinking water" (Whitehead 2016).

[156] Brooks (2007: 704) states that empirical evidence indicates that relevant political actors are those which are "geographically proximate and thus which share political networks and economic linkages … [they] also may be defined by cultural ties and shared economic status."

[157] See, in particular Stone, who states that "there is a convergence in the ideational literature that ideas matter more (or at least their impact is more observable) in circumstances of uncertainty where interests are unformed or some kind of crisis (war, environmental catastrophe, election swings) disrupts established policy patterns and provokes paradigmatic revision" (2001: 12). See also Brake and Katzenstein (2013: 747) and Simmons et al. (2008: 31).

words, policy-makers attempt to apply rational cost-benefit analysis and follow a consequence-driven logic, but frequently do so with incomplete or biased information that may not produce "optimal" outcomes.[159]

Because learning relies on conveying and interpreting information,[160] non-state actors play a central role in the diffusion process. There are three types of non-state actors that are particularly prominent in the literature: formal organizations, epistemic communities, and individual policy, norm, or legal entrepreneurs. The first set of formal actors consists of inter-governmental organizations (IGOs) and non-governmental organizations (NGOs), many of whose mission statements and organizations reflect an information-collecting and information-disseminating role. IGOs, for example, often organize data collection and processing in order to form pre-packaged "best practices" and policy recommendations for member states.[161] NGOs perform a similar function in many issue areas, although their information-dissemination

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[158] The rational learning perspective typically assumes full information and tends to implicitly assume that the lessons drawn from a particular policy example are consistent across countries and are aimed at policy efficiency. Sharman (2008: 643), for example, writes that "According to the rational model, policy-makers should seek out evidence of how to make policies more effective and less costly." This fully rational perspective has come under increasing scrutiny as empirical research has offered stronger support for boundedly rational learning processes (Marsh and Sharman 2009: 76) that suggest that learning takes place with incomplete information and may be subject to bias. Although somewhat more realistic than a full-information perspective, this interpretation of learning is not wholly unproblematic. As Marsh and Sharman observe, it becomes difficult to predict behavior or attribute diffusion to learning if the lessons being drawn are not consistent across actors. Specifically, the authors state that, "The problem lies in how to reconcile a bounded version of learning with policy diffusion … If politicians, in their policy analysis, are indeed subject to the cognitive biases mentioned above, then they should rarely draw the same conclusions and make the same decisions" (2009: 76-77). It should also be noted that, beyond biases related to which countries are more readily observed, there is also a pro-innovation bias: countries that do not implement changes may be overlooked as sources of information, further complicating any claims to rationality.

[159] For a powerful account of the prevalence and potentially disastrous consequences of boundedly rational policymaking, see Poulsen and Aisbett (2013).

[160] Cao (2009: 1098); Brake and Katzenstein (2013: 747).

[161] Cao suggests that intergovernmental organizations serve as "channels for the spread of information" (2009: 1098) whose messages are strengthened by the fact that members see each other as part of an "in-group" (2009: 1099). It should be noted, however, that IGOs also play a role in other mechanisms of diffusion, most notably the coercive mechanism.

strategies may often take a more confrontational stance towards the state, working indirectly through civil society to influence policy makers. The second set of actors consists of epistemic communities,[162] which Haas defines as "a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue area."[163] Beyond being unified in their area of expertise, epistemic communities share principles, beliefs about causal chains within their specialties, ways of determining the validity of knowledge, and a "common policy enterprise."[164] Although they are often housed within international institutions or are members of the domestic elite, epistemic communities transcend individual institutions. They encourage international diffusion by identifying innovations, exchanging information with other community members, offering interpretations of other countries' experiences, and developing policies to present to domestic policy-makers.[165] These activities may not be coordinated, yet work in concert.[166] Their unified view magnifies their influence, ultimately allowing them to create or frame policy issues, or even create new institutions to promote their position. Finally, networks of legal or policy

[162] Some definitions of learning *require* the contribution of epistemic communities in order to classify states' behavior as learning. Haas (1990: 3), examining learning in organizations, thus suggests that one characteristic of learning is that "New nested problem sets are constructed because new ends are devised on the basis of consensual knowledge that has become available, as provided by epistemic communities." In contrast, under adaptation "New ends (purposes) are added without worrying about their coherence with existing ends. Change is incremental without any attempt at nesting purposes logically." Thus, epistemic communities are an important source of coherence and logic to new policies. For a description of how epistemic communities form causal logics and exert their influence, see Adler (1992). While the definition of learning adopted in this project does include the type of formalized, theory-driven learning described by Haas, it is more expansive and also includes much of the incremental change Haas describes as adaptation.

[163] Haas (1992:3).

[164] Haas (1992:3).

[165] According to Haas, policy evolution has four steps – "policy innovation, diffusion, selection, and persistence" – in which epistemic communities can play a role (1992: 373).

[166] Haas (1992: 379).

entrepreneurs can play an independent role in the learning process. Contrary to epistemic communities, such entrepreneurial actors agree on the existence of a policy failure but lack a common causal understanding or goal.[167] Their primary motivation may, in fact, be personal advantage.[168] These actors, frequently drawing on their international educational or business networks, inform themselves about successful (or unsuccessful) policies elsewhere and use their domestic connections to advocate for related reforms at home. Variations in the interests of these actors can therefore lead to different policy proposals in different – or even the same – countries.

Learning therefore has several important characteristics. First, like competition, it is diffuse and does not require power asymmetries. More powerful actors may be more visible and therefore more likely to act as either positive or negative examples to others. However, information and lessons about weaker actors can – when perceived as relevant – promote policy change even in powerful states.[169] Second, learning gives agency to the importer, along with substate actors involved in information dissemination. Policy exporters may be involved in sharing information about themselves, but this is neither necessary nor sufficient for diffusion. Finally, learning does not imply that the policy be imported wholesale. Policies can and ideally should be adapted to local conditions. Learning differs from competition in that actions in the exporting state do not directly alter the payoffs for the importing state. Instead, the importer's

[167] Langer, focusing on networks of legal activists, argues that they are distinct from "advocacy networks/social movements, transnational governmental networks, and epistemic communities," because they "worked as both experts and activities for these reforms without serving any broader social movement" (2007: 620).

[168] Dezalay and Garth (2002: 21).

[169] For example, one might look at recent U.S. primary debates, in which presidential candidates raised the possibility of modeling certain policies on those of Denmark (see Tankersley 2015). Although these proposals may be dropped in response to claims of exceptionalism, it is clear that some powerful actors do look outside the country for examples. While such cases exist, it is also likely that, in many circumstances, powerful countries do not see weaker ones as relevant or as sources of innovation, significantly impeding the process of learning.

perceptions about the likely payoffs from policy change are altered through observation of the exporter's experience.[170] Learning differs from emulation (discussed below) in that policy change is linked to perceptions about success and failure rather than appropriateness.[171]

One of the clearest cases of learning in oil and gas was the spread of the 50/50 taxation principle pioneered by Venezuela. This principle had as its stated goal the elevation of royalties and taxes such that government revenues were equal to companies' net profits.[172] Venezuela actively promoted the principle in the Middle East, following which Saudi Arabia and other countries initiated concession renegotiations.[173] The new demands, however, differed in an important way from the Venezuelan model. The new terms in some countries formally fell under the 50/50 mark (even the government take exceeded that of the Venezuelan government due to the type and timing of taxation), and were written into the concession contracts.[174] The Venezuelan experience illustrated that change was feasible, yet the lesson was adapted to local realities. The Saudi experiences were subsequently used as an example by others, launching a wave of renegotiations that eventually circled back to early movers.

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[170] See Elkins and Simmons (2005: 42), who argue that, "In learning processes another actor's adoption does not alter the conditions of adopting. Rather the action provides information about such conditions, including the benefits and drawbacks of adopting."

[171] More specifically, Brooks and Kurtz argue that learning "should be distinguishable from more generalized emulation insofar as adoption decisions are tied directly to the performance of previous adopters, rather than the mere fact of adoption" (2012:99).

[172] Yergin (1991: 435).

[173] Yergin (1991: 445-446); Turner (1983: 7).

[174] See Yergin (1991: 446-448) and Parra (2010: 19).

4.4 Emulation

The final mechanism of diffusion is emulation, which is closely related to the constructivist approach in international relations. It assumes that policy-makers do not choose policies by objectively and rationally evaluating their prospective success or failure based on the choices of other countries. Instead, countries adopt innovations when they have become institutionalized, regardless of efficacy.[175] Actors construct a system of behaviors or policies they consider to be appropriate based on the actions of relevant peers or other actors to whose status they aspire,[176] whose norms have been internalized as being "fair" or "appropriate,"[177] or which, owing to their origin, are able to bring their own legitimacy.[178] A core challenge to assessing emulative behavior is, therefore, to identify a given country's "peer" group or set of prestigious nations.[179]

While previously discussed mechanisms referenced key competitors and "relevant" countries, membership in which is determined to a large extent by material factors, peer groups are more ideational in nature. Peer groups are social constructs that combine elements of history,

[175] In this way, emulation is often described as status- or prestige-seeking. (Simmons et al. 2008: 32; Brooks and Kurtz 2012: 99).

[176] Brake and Katzenstein (2013: 746)

[177] This focus on appropriateness lies in contrast to a "logic of consequences" in which actors are primarily motivated by perceived costs and benefits of action (Finnemore and Sikkink 1998; Meseguer 2005). Of the four causal mechanisms identified in the diffusion literature, only emulation follows a logic of appropriateness.

[178] The need for legitimacy has been particularly emphasized in law. Miller suggests that this drive to acquire legitimacy is particularly pronounced in developing countries with institutions that are too weak or new to generate their own legitimacy (2003: 857)

[179] Much of the literature assumes that model countries are usually chosen on the basis of prominence (see, for example, Brooks and Kurtz 2012: 99) – this view tends to privilege the West, particularly regional or global hegemons, as policy leaders. In terms of legal change, Mattei suggests that prominence may be equated with the level of development of a legal system (Mattei 1994: 7).

politics, culture, geography, and even race[180] to develop conceptions of self and other.[181] Members seek to consciously adopt policies that signal adherence to group norms, creating a tendency towards harmonization. Doing so rewards emulators with "legitimation, conformity, and esteem."[182] Membership can be determined in a number of ways: a peer group might arise spontaneously around shared identities (which may be issue-specific);[183] it might be the result of conscious efforts to invite and socialize a new member;[184] or membership might be expanded through the efforts of an aspirant who adopts the community's policies and norms in the hopes of winning access and thereby acquiring the prestige and other normative rewards of membership.[185] One or more countries might arise as leaders within a peer group, setting the policies that others ultimately choose to emulate.

There are two primary ways in which emulation tends function in the literature. First, emulation may be the result of socialization, "defined as a process of inducting actors into the

[180]When discussing the membership of the North Atlantic "community," Deutsch draws on questions of geography and culture, along with common experiences (1957: 9-21). Looking at a different region, Hemmer and Katzenstein likewise suggest that "racial, historical, political, and cultural factors" shaped American and European understanding about membership in a shared community, leading to the exclusion of Asian allies from the security framework (2002: 575).

[181] Peer groups are not necessarily spontaneous combinations, but can be shaped through conscious efforts on the parts of member states or international institutions (Adler 1998: 119).

[182] Legitimation by members of one's community strengthens domestic legitimacy and creates a sense of superiority, while conformity proves belonging in the community, and esteem reflects feelings held by leaders that they are well-regarded, adding to their own sense of well-being (Finnemore and Sikkink 1998: 903).

[183] One such example might be OPEC, which formed around a common identity of developing country, major oil exporter. Beyond facing similar challenges, these countries dramatically redefined the role of the host country and its relationship to its natural resources, suggesting that identification went beyond material interests.

[184] See, for example, numerous studies about European security and economic communities such as Adler (1998) or Gheciu (2005).

[185] An example might include efforts of former Soviet countries to join the European Union or security alliances. In many cases, the rewards that come with membership are both normative (the source of emulation), as well as material, with the consequence that emulation often also possesses coercive elements.

norms and rules of a given community."[186] For example, new and potential members into the European Union are not just required to make specific policy changes, but are encouraged by other states and societies to adopt other European norms and practices. This has been explored in the area of LGBTQ+ politics, where European discourse on democracy is used to create opportunities for activism.[187] In such cases, the impetus for policy change comes primarily from the exporter rather than the importer. Exporting states may encourage their favored models by diplomatic and symbolic means, while individual policy or norm entrepreneurs attempt to connect with domestic advocates to pressure importing countries into "favorable" policy changes.[188] Importers are thereby convinced that a specific policy will convey legitimacy and standing within the broader community. Second, emulation may take place without the participation – or even knowledge – of the policy exporter. Information about policy alternatives might travel through partisan or ideological cues,[189] through domestic actors advocating the adoption of certain standards or practices, or even through international consultants and advisors.[190] In this case, emulation is demand-driven. Who is emulated is determined in large part by the preferences and strength of domestic advocates.

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[186] Checkel (2005: 804). For a discussion of the process by which socialization can take place, see Gheciu (2005), who describes the way Central and Eastern Europe were socialized into internalizing NATO norms.

[187] Ayoub (2013).

[188] More specifically, "In the context of international politics, socialization involves diplomatic praise or censure, either bilateral or multilateral, which is reinforced by material sanctions and incentives. States, however, are not the only agents of socialization. Networks of norm entrepreneurs and international organizations also act as agents of socialization by pressuring targeted actors to adopt new policies and laws and to ratify treaties and by monitoring compliance with international standards" (Finnemore and Sikkink 1998: 902).

[189] See, for example, Karch (2007: 64).

[190] These same actors can also be involved in the learning process. What determines whether their activities contribute to learning as opposed to emulation is the extent to which they convey information rather than normative categories. Thus, Kogut and MacPherson describe the role of epistemic communities in emulation as "the

In both cases, imitation is motivated by a desire to signal belonging and legitimacy,[191] by a sense of admiration,[192] or simply to signal "normalcy."[193] Thus, the importer's actual or desired identity drives this mechanism.[194] Emulation tends to reflect Barnett and Duvall's conception of productive power,[195] where discourse determines what constitutes normal or possible action, while also giving meaning to specific identities and creating asymmetries through social categorization.[196]

In practice, emulation can be difficult to distinguish from other causal mechanisms, as a primary source of emulation – prestige – is often correlated with coercive power, sources of competitive pressures, or the type of visibility that facilitates learning. It does have, however, several distinguishing factors. First, as noted by Miller, policies spread by means of emulation derive their legitimacy almost exclusively from adoption by the exporting country.[197] Therefore, importing countries are loath to make changes to models imported by emulation, even where

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acquisition of ontological categories and their relationships that anchor strong professional identities and epistemological stances" (2008: 114).

[191] Specifically, DiMaggio and Powell suggest that "Organizations tend to model themselves after similar organizations in their field that they perceive to be more legitimate or successful" (1983: 152). See also Lee and Strang (2008: 149).

[192] A notable feature of emulation that has been underemphasized is that it is "constructed as fully consensual" (Mattei 2003: 389).

[193] Meseguer (2005: 73).

[194] Some authors also suggest imitation results when actors with poor policy track records copy the policies of more successful actors (see Axelrod 1986: 1098). This success-driven interpretation of imitation, however, would be in closer accordance with a logic of consequences than of appropriateness, and therefore falls outside of this paper's definition of emulation.

[195] This observation is also made in Sharman (2008: 647).

[196] Barnett and Duvall (2005: 55-56).

[197] Legitimacy is particularly important in the discussion of legal diffusion, as law's power rests almost entirely on its perceived authority rather than quality, as discussed by Watson (1993: 90): "law is maintained by the authority of the government, and even gods are invoked; examining of quality is reduced to a poor second best."

failure to do so undercuts other political goals, results in a loss of autonomy,[198] or produces policies that are patently ineffective or inefficient.[199] Second, as with coercion, emulation tends to be facilitated by asymmetries: those with greater prestige are unlikely to emulate less prestigious countries. Yet, emulation may still occur among prestigious countries that consider themselves part of the same community, such as within the European Union or the OECD. Finally, emulation tends to be non-recursive; being imitated is unlikely to cause policy exporters to alter their own policies.[200]

Given the high stakes involved in oil development, it might seem surprising if countries adopted policies without a firm understanding of their consequences. However, it might be argued that certain policies or models have been embraced as "solutions" without adequate consideration of how to adapt them to local circumstances. The most prominent example is the "Norwegian model" of oil governance, which has attracted much interest as a "cure" for the resource curse.[201] There are numerous parts to the Norwegian model, two of which are its creation of a petroleum fund to mitigate the volatility of oil revenues and the separation of powers in the governance of the oil sector. More than 27 countries,[202] including most recently

[198] Miller (2003: 858-859).

[199] Sharman (2008: 643). See also Watson (1993: 90), who writes that "a law is often adopted because of the reputation and authority of its model or promulgator; hence in part, the reception of even less than adequate rule."

[200] There may be exceptions to non-recursivity if a critical mass of imitators moves beyond the standards set by the initial leader. This, however, would be inconsistent with the supposition that imitators are loath to alter policies out of fear of losing legitimacy and would suggest that the process is more akin to learning than imitation.

[201] The "resource curse" is defined somewhat differently in different disciplines. In effect, it posits a causal link between oil revenues and a number of negative political and economic outcomes. The most common versions propose that oil undermines democracy (Ross 2001; Aslaksen 2010; Herb 2005), threatens regime survival (Smith 2004; Morrison 2007), breeds corruption (Papyrakis and Gerlagh 2004; Anthonsen et al. 2009; Bulte and Damania 2008), slows economic development (Sachs and Warner 1995), and raises the likelihood of war (Fearon 2005; Humphreys 2005).

[202] Critchley (2015).

Mexico, have created petroleum funds. Many others, particularly in Latin America, have begun to implement governance reform that involve setting up independent regulators. While such reforms may be beneficial in some cases, blind adoption of the model may be counterproductive: Norway differs in important ways from other countries and its institutions may be inappropriate in environments with a larger resource base and limited institutional capacity.[203]

4.5 Comparing Causal Mechanisms of Diffusion

Based on these descriptions, the causal mechanisms can be summarized along four dimensions: (1) power relationships, (2) drivers, (3) recursivity, and (4) the importance of domestic politics. First, with respect to power, both coercion and emulation are typically magnified in the presence of asymmetries – with coercion relying more on material power while emulation rests on symbolic or discursive power. In contrast, competition and learning are non-hierarchical; peer groups rather than power asymmetries are facilitators of diffusion. Second, both coercion and competition are processes that imply a high level of imposition. In the case of coercion, policy choices are shaped by the distribution of power in the international system, with the strong coercing the weak. In the case of competition, the invisible hand of the market imposes discipline, forcing governments towards particular policy choices. Learning and emulation, on the other hand, are processes that privilege choice. Although policy exporters can play a role in shaping what options receive consideration, change is voluntary and largely shaped by preferences about domestic needs or, in the case of emulation, about choice of role model.

[203] See Ryggvik (2010) for a discussion of the overlooked limitations of the model in Norway. The author suggests that other countries are likely to place too much faith in this model as a "cure" to the resource curse (2010: 82-83). Thurber, Hults, and Heller (2010: 4), examining the governance models of ten oil producers, suggest that adoption of the Norwegian model can, in some cases, actually be a harmful misallocation of limited resources.

Third, recursivity represents the extent to which policies undergo transformation in the diffusion process or induce further change among the exporter or third parties. Both competition and learning tend to be recursive processes, while coercion and emulation are unidirectional and tend towards wholesale, unreflective adoption. Finally, domestic politics are more or less influential in different cases. Both coercion and competition suggest a relatively small role for domestic political actors, while the preferences and distribution of power among domestic elites are highly significant for learning and emulation, as discussed in the following section. Summary Table 2 represents only an ideal type and simplifies some of the preceding discussion. It represents a starting point for identifying mechanisms of diffusion in a particular case, but should be complemented with case-specific analysis when applied in practice. Notably, these characteristics describe the cases when diffusion is most likely without ruling out the possibility that it might occur in other circumstances.

TABLE 2. KEY CHARACTERISTICS OF THE CAUSAL MECHANISMS OF DIFFUSION

	Coercion	**Competition**	**Learning**	**Emulation**
Power Relationship	Asymmetrical	Non-hierarchical	Non-hierarchical	Asymmetrical
Central Driver	Imposition	Imposition	Choice	Choice
Recursivity	Non-recursive	Recursive	Recursive	Non-recursive
Role of Domestic Politics	Low	Low	High	High

5 The Relative Influence of Causal Mechanisms

The diffusion literature's emphasis on causal mechanisms has generated a growing demand for prediction.[204] This study attempts to respond to this demand by laying out a framework for determining when some mechanisms of diffusion are more likely to prevail over others. It does so through the use of a two-level game[205] approach in which national and international factors interact to shape the relative strength of the four causal mechanisms of diffusion. Those mechanisms, in turn, govern the choice among multiple policy alternatives. At the international level, the framework recognizes two types of states, North and South, which face different resource constraints and operate within different peer groups. At the domestic level, it draws on nationalist theoretical perspectives to suggest that competing groups within society – driven by both material and ideational interests – direct the choice among policy options.

[204] In an attempt to predict the timing of different causal mechanisms in BIT diffusion, for example, Jandhyala, Henisz, and Mansfield write that "scholars have not identified the conditions under which diffusion is likely to be driven by a particular mechanisms, nor have they studied why these conditions might change over time" (2011: 1048). Proposing future directions in diffusion research, Karch similarly suggests that "Future studies should specify the conditions under which particular causal mechanisms are most likely to affect policy diffusion" (2007: 68) and Meseguer and Gilardi recommend the development of "much more refined and unified hypotheses about what type of mechanisms are expected to be relevant and when" (2009: 538).

[205] The two-level game represents "a metaphor for domestic-international interactions" in which central policy makers must contend simultaneously with pressures from domestic coalitions operating at the national level and the consequences of those policies at the international level (Putnam 1988: 433-434). See Milner (1997) for a more recent application of this approach. For a direct application of two-level games to diffusion studies, see Finnemore and Sikkink, who state that "international norms must always work their influence through the filter of domestic structures and domestic norms, which can produce important variations in compliance and interpretation of these norms … In other words, there is a two-level norm game occurring in which the domestic and the international norm tables are increasingly linked" (1998: 893).

5.1 International Level

For the sake of simplicity, I assume that there are two types of countries: North and South. The North represents countries with substantial material and symbolic resources which on that basis are regarded as peers. In real-world terms, the North is best represented by membership in the OECD. The South, on the other hand, has fewer resources and therefore confronts different development priorities and concerns.[206] Each type is a potential policy exporter or importer. In principle, diffusion should thus be able to take four forms: North→North (NN), North→South (NS), South→North (SN), or South→South (SS). Each of these configurations affects the causal mechanisms of diffusion by means of power asymmetries and peer group dynamics.

First, given the definitions of North and South, relations between NS and SN dyads are inherently asymmetrical; conversely, the distribution of power is assumed to be largely symmetrical in cases of NN and SS.[207] As outlined above, power asymmetry facilitates coercion.

[206] The assumption that North and South constitute the only types of countries is a simplifying one and clearly overlooks the tremendous variation within each of these groups – it is almost certainly incorrect to view the "South" as a single set of peers within which there are no power asymmetries. These groupings are indicative – depending on the sample of countries and issue area, researchers may wish to introduce more types or levels of distinction. One alternative categorization that might be used is that of network centrality, where more central states would be the equivalent of North and the peripheral ones would represent the South. However, the basic argument can be illustrated with just a two-country framework, and the remaining chapters of this dissertation, which maintain this simplifying assumption, illustrate that, in spite of its limitations, it does possess empirical value.

[207] Significant variation may, of course, exist within each of these categories – as, for example, when comparing the military capabilities of the United States and Japan, both considered Northern states based on economic development, or when contrasting the prestige of China and Belarus, both of which are considered developing countries. Depending on the research question, the categories of North and South might need to be examined among subsets of countries or reconfigured by issue area. The key determinant of North and South is relative power, rather than economic development, although several authors have presented persuasive arguments about why economic development is likely to affect diffusion. For example, Brooks indicates that resource constraints in developing countries both "make it more difficult for policy makers in those countries to arrive at independent judgments about a project's merit" and consequently rely on other countries' experiences while also facing higher stakes of waiting or getting the policy "wrong" (2007: 706).

Resource advantages make it easier for powerful actors to alter others' payoffs through compulsion or offering of incentives, as when colonial states imposed their legal codes on subject states. Although coercive power may come from many sources and developing countries may at times successfully change the behavior of materially more powerful countries, these cases are likely to be less common. Similarly, power asymmetry is a contributor to emulation, with importers seeking to associate themselves with more powerful or prestigious countries while avoiding association with those perceived as weaker. Thus, both coercion and emulation strongly favor NS diffusion, but are less likely to drive cases of SN diffusion.[208]

Although both North and South might further be subdivided into smaller groups for more nuanced comparison – such as on a regional basis or according to economic criteria as in the case of the BRIC countries – for the purposes of this discussion, members of each group are treated as roughly equal in power.[209] Given this assumed symmetry, diffusion within NN and SS dyads is again less likely to be driven by coercion (though more so than in SN dyads), while the effects of emulation will be weakened relative to the asymmetric case. Instead, diffusion is likely to be governed by the non-hierarchical mechanisms of competition and learning. Competitive pressures should be at their greatest when there are few differences in comparative or competitive advantages across countries, such as when competitors are members of a common currency or free trade area, or the economy relies less on physical factor endowments. While all

[208] The idea that the effects of emulation are amplified in North-South dyads is advocated by Marsh and Sharman (2009), although, as Mattei suggests, it is possible that the South is pursuing a counter-hegemonic identity (1994) – as in the case of the development of the New International Economic Order – which would undermine the symbolic appeal of the North and contribute to SS diffusion, instead.

[209] It is, for example, quite common for international political economy or comparative political economy studies to treat emerging markets and OECD countries separately. The importance of being considered part of a competitive peer groups is discussed above.

states compete with each other to some extent – even if only in select industrial sectors – the comparative size and similarity would suggest that competitive pressures are greatest in NN dyads, which are large, diversified, and increasingly competing in knowledge-based industries. This is followed by SS dyads, with a greater emphasis on primary and manufacturing industries. NS and SN configurations are likely to generate competition only in limited areas.

The learning mechanism relies both on a perception of relevance or similarity as well as availability of information. Much like competition, developed and developing countries may not perceive each other as relevant sources of information given differences in demographics, wealth, resource endowment, and political system.[210] Nevertheless, NS learning is fostered by a plethora of programs run by aid agencies and multilateral organizations aimed at information dissemination, along with Southern elites' educational and business ties to the North. SN learning might occur in response to exceptional success stories, such as the adoption of microcredit and cash transfer programs.[211] Such cases are, however, probably quite rare due to lack of routinized information exchange between South and North and likely claims of incomparability. NN and SS learning is supported by a wealth of international organizations as well as formal and informal ties that facilitate information transmission, coupled with a perception of similarity. Such symmetric dyads are therefore most prone to diffusion by learning.

Overall, given these assumptions about power asymmetries and peer groups across two types of countries, one would anticipate diffusion among NN and SS to be driven primarily by

[210] Simmons et al. (2008).

[211] According to the Japan International Cooperation Agency, the Arkansas Good Faith Fund and the subsequent national microcredit model adopted in the U.S. were inspired by microcredit lending experiences in Bangladesh (JICA 2011).

competition and learning. In contrast, diffusion among NS dyads should be predominantly the result of coercion and emulation, with some degree of learning, while diffusion among SN dyads is likely to be relatively rare and driven largely by learning. This picture, however, is incomplete, failing to account for the role of domestic elites in the decision-making process.

5.2 Domestic Level

The international dimension offers valuable insight into the types of mechanisms that might govern a particular relationship, yet it ignores an important additional factor: receptivity. As outlined above, some mechanisms of diffusion are strongly demand-driven and are consequently sensitive to the preference of domestic decision-makers – both in terms of whether there is interest in importing a foreign model and where decision-makers look for policy inspiration. To understand diffusion, it is therefore necessary to examine the domestic level.[212] This analysis is inspired by domestic-nationalist theories,[213] suggesting that different domestic groups are drawn towards different types of states as role models. This attraction, in turn, amplifies or diminishes the effectiveness of various mechanisms. For the sake of drawing generalizations about states' attitudes towards diffusion, this analysis focuses on the preferences

[212] The absence of the domestic level of analysis has been noted in many recent surveys of the literature: Marsh and Sharman, for example, assert that "a central premise of the diffusion literature in international relations, as well as institutional isomorphism in sociology, is that countries adopt similar policies almost regardless of domestic circumstances" (2009: 279). Meseguer and Gilardi, suggesting new directions for diffusion research, similarly state that "of particular interest is to explore how domestic politics conditions policy diffusion" (2009: 533).

[213] According to nationalist international relations theory, state preferences are the product of national identity, which "helps determine the states against which relative success is measured and from which autonomy is pursued" (Abdelal 2001: 42). Although states and domestic actors are partially motivated by material factors, historical, cultural, and ideational concerns add directionality to those preferences. It should be noted, however, that while the perspective presented here is inspired by nationalist approaches, it exists in only a simplified form. A full application of this approach heavily emphasizes historical and cultural context and rejects the idea of a general predictive theory (Abdelal 2001: 42-43; Helleiner and Pickel 2005: 11).

of domestic elites.[214] It further simplifies the analysis by dividing elites into two groups: outward-oriented and inward-oriented,[215] either of which may prevail in the South or North.

Outward-oriented elites in the South draw power and legitimacy from their connection to influential states abroad, primarily in the North. These elites receive their education or training overseas, often in the United States, possess international business connections, and may even receive funding from IGOs or philanthropic foundations.[216] These shared experiences serve as both a resource and as a basis for a common identity that collectively grant the elite disproportionate influence in domestic politics.[217] This influence is subsequently wielded to build even stronger international linkages, making the country more receptive to emulation, learning, and coercion from the North.[218] Emulation is particularly likely when the elite's power or legitimacy is threatened and it seeks to reinforce its position through reference to more

[214] This simplifying assumption obscures the reality that that the preferences of broader society may also be influential and the elite may not be unified. In fact, a key aspect of nationalist theory is that national identity is not given but contested (Abdelal 2005: 24-25).

[215] There are numerous other ways in which one might determine ideal types for domestic interest groups. The approach adopted here bears some resemblance to research on regional cooperation, which divides domestic coalitions into internationalist and backlash coalitions, which roughly approximate what I describe as inward- and outward-looking (Solingen 1999: 32). These groups are concerned with the distributional consequences of international policies along with concerns over the consequences of policies to identity, and pursue both domestic and international grand strategies (32-33). Solingen's approach delves deeper into the domestic sphere than this analysis, examining the balance of power between those coalitions to determine states' ultimate policies. In contrast, this analysis assumes that the struggle for power has already resolved in favor of one group. This scope decision is in large part the result of the objective of this project, which is to trace global patterns of diffusion rather than to focus on the policies adopted in individual states. Examining the domestic coalitions in over two hundred states over a period of more than fifty years extends beyond the feasibility of a single research project.

[216] Dezalay and Garth (2009: 122); Dezalay and Garth (2002: 184).

[217] Dezalay and Garth (2002: 19).

[218] With regards to emulation, in a study of costly anti-money laundering policies that fail to grant developing countries substantial benefits, Sharman suggests that imitation drives much of policy-making. In the case of learning, the amplified effect is the result of greater knowledge of Northern laws and policies owing from time spent abroad and information traveling through international networks of professionals. Finally, as the national elite, this group will tend to be more sensitive to targeted incentives and punishment from abroad, which is likely to affect them disproportionately – either directly through their personal assets or indirectly through public blame.

powerful states. Learning is likely ongoing as elites remain informed about developments overseas and take advantage of windows of opportunity or pressures by epistemic communities or policy entrepreneurs to implement reform. Outward-oriented elites are also likely to be particularly sensitive to censure and therefore coercion from the North – with financial and reputational interests abroad, they are likely to be sensitive to threats (or inducements) to those interests. The effects of competition may be more complex and influenced by the sources of elite wealth. Where elites are grounded in sectors benefiting from protection, the country may be less sensitive to competitive pressures than otherwise might be the case.

The outward-oriented North differs from the outward-oriented South because shared elite experiences have a stronger domestic component. Northern elites should be less intellectually dominated than those of the South,[219] reducing the influence of emulation without eliminating it entirely. Relying on a more prosperous and stable domestic economic base, Northern elites are also less sensitive to coercion. They are likely in communication with other Northern elites about policy change and thus responsive to learning. At the same time, given the openness of most industrialized economies, Northern elites are likely to be sensitive to competition from the North. The effects of all of these mechanisms should be severely diminished in all interactions with the South.

Alternatively, countries might be dominated by inward-looking (or counter-hegemonic) elites, reducing the propensity towards diffusion while creating greater opportunities for diffusion within the South. There are two types of inward-looking elites. First are "traditional intellectual" elites, which are "embedded representatives of law and state, orthodox religious

[219] Dezalay and Garth (2002).

leaders, and traditional segments of the legal profession."[220] Such traditionalists, such as Iran's Ayatollah Khameini, have vested interests and ways of thinking rooted in existing structures of policy formulation. They reject foreign ideas as costly to themselves or as incompatible with existing structures.[221] Second, "critical public intellectuals"[222] – especially those in the South – who are associated with domestic universities, think tanks, grassroots movements, or the media are concerned with the imperialism from the North and will tend towards overtly nationalist projects. Raúl Prebisch, for example, was one of the fathers of dependency theory and import substitution industrialization. Where these groups dominate policy making or public discourse in the South, they consciously favor domestic or Southern alternatives. Both types of counter-hegemonic elites are likely to offer resistance to coercion, as they draw their legitimacy and power from domestic sources, reducing their sensitivity to external sanctions or rewards. Both types are less sensitive to competition owing to their reduced involvement in business. While diffusion as a whole is diminished, it is most likely to take place by learning and emulation as countries seek more "appropriate" sources of ideas or are inspired by countries facing similar challenges.

Based on this assessment, policies originating in the South are most likely to be diffused to inward-looking Southern countries with influential critical public intellectuals, and perhaps to inward-looking Northern countries. Northern models are most strongly diffused to outward-oriented Southern countries and by outward-oriented Northern states, while the inward-looking South with strictly traditionalist elites will seek to reject diffusion from either source.

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[220] Heydebrand (2001: 122).

[221] This discussion draws on Mattei's analysis of Latin legal counter-cultures (2003: 415).

[222] Heydebrand (2001: 122).

5.3 The Two-Level Model

Both the international and domestic levels presented above offer a set of hypotheses about the circumstances under which certain mechanisms become more influential. Combining the two types of states – either of which can be an exporter or importer – and the two types of elites, this framework produces sixteen possible scenarios in which diffusion might take place. Table 3 summarizes these scenarios. Apart from specific expectations about each case, the framework also provides some more general insights into the way that diffusion operates between North and South. Overall, it suggests that South-South diffusion is advantaged across a wider variety of circumstances and takes place through a greater diversity of mechanisms.

The summary table considers two types of states (North and South) and two types of elites (inward- and outward-looking), while also recognizing that both states and elites can belong to either exporting or importing countries. The columns refer to exporter country characteristics while the rows describe importers. There are sixteen possible combinations, such as a Northern state with an inward-oriented elite that is a potential policy exporter to a Southern state with an outward-oriented elite. This hypothetical is captured by the intersection of the first column and the fourth row. In any given scenario, there are four possible causal mechanisms: coercion (C or c), competition (K or k), learning (L or l), and emulation (E or e). Lower-case letters signify a weak effect while upper-case letters represent strong effects. Thus, the case in question would be prone to low levels of coercion, but strong pressures for diffusion through competition, learning, and emulation.

TABLE 3. THE INFLUENCE OF DOMESTIC ELITES ON CAUSAL MECHANISMS[223]

			Exporter			
			North		South	
			Inward	Outward	Inward	Outward
Importer	North	Inward	c k l e	c K l e	c k l e	c k l e
		Outward	c K L E	c K L E	c k l e	c k L e
	South	Inward	c k l e	c k l e	c k l E	c K l E
		Outward	c K L E	C K L E	c K L E	c K L E

Unsurprisingly, Table 3 reveals that diffusion is most likely to take place in cases that involve outward-oriented elites in the importing state, both because those elites are more open to learning and emulation, but also because they are more vulnerable to imposition by individual actors and markets. Outward orientation of elites in the exporting state also encourages diffusion by creating incentives for imposition. Overall, the table suggests that coercion should be the least common leading factor of diffusion in any case. It is a major source of pressure only in cases of NS diffusion in which both countries have an outward-oriented elite, in which case the exporter's potential power and elevated interest interacts with the importer's increased openness and vulnerability. The remaining mechanisms appear as a dominant source of diffusion with similar frequency. Diffusion by any mechanism is least likely to occur between Southern exporters and Northern importers, regardless of elite type. Beyond these findings, the table also illustrates that,

[223] This table is inspired by a mapping of domestic coalitions in favor of economic and security regimes developed by Solingen (2001: 520).

holding elite type constant, importing states from the South always face equal or greater pressure – and typically from different mechanisms – for diffusion than importing states from the North.[224]

Table 3 might also be used for leverage in generating expectations about what would happen when a country is faced with a choice between two or more policy options from different sources.[225] Specifically, assume that a Northern state with an outward-oriented elite were considering policy change and potential models existed in the North and in the South. Examining the second row of the table, regardless of the exporter's elite type, the strength and variety of mechanisms for diffusion from the North would far outweigh pressures from the South and the Northern model would likely prevail.

5.4 Model Limitations and the Potential for Prediction

The model developed above represents an analytical simplification for the purposes of drawing testable implications. It is intentionally parsimonious and classifies states across only two dimensions (core/periphery and inward/outward elite). Actual cases might prove to be significantly more complex in terms of the number of types of countries and elites. Moreover, the mechanisms might operate slightly differently across issue areas and the analysis might require recalibration. Researchers have also proposed a number of conditioning factors that could have an independent effect on the strength of diffusion while also potentially magnifying or diminishing the influence of particular causal mechanisms. Those factors might include

[224] Where pressure for diffusion is captured by the number of capital letters in a given cell. This finding might serve to partially explain the existence of a North-South bias in the literature.

[225] Recent work has begun to both acknowledge and incorporate consideration of multiple alternatives. For examples, see Brooks (2007), as well as Garoupa and Ogus (2006).

geography,[226] history,[227] government capacity and characteristics of the policy itself.[228] While these added factors would no doubt contribute to greater realism and would produce more nuanced expectations, they lie outside of the scope of the present study. Following the reasoning of analytic narratives, which marry theoretical rigor with in-depth case analysis, a major purpose of the study is to examine the extent to which this simplified model can provide useful insights without the need for additional complexity.

Acknowledging that prediction has at times been over-emphasized in recent political science,[229] this theory is nevertheless aimed at identifying regularities in the pattern of diffusion. While this may not be possible in a political world that resembles a cloud-like open system rather than a clock-like closed system,[230] it may be possible to develop "soft" projections about human behavior.[231] The relatively open-ended and flexible nature of the propositions generated in Table

[226] Geography might be relevant to diffusion in three respects: size, resources, and proximity. Research has suggested that small states in an interdependent world are much more sensitive to other countries' policies than are large states (Katzenstein 1985). Resources affect competitive advantages and peer groups, while geographic proximity may also affect peer group status – although Karch suggests that evidence to this effect is limited (2007: 58). Geography may be correlated with linguistic and cultural factors that affect the propensity for diffusion between given dyads.

[227] History affects the filters by which policies are perceived and implemented, but also create path dependencies that might create predispositions towards certain types of policies. Shared historical experience could also affect peer groups.

[228] While not discussed here, recent research suggests that the characteristics of the policy or law itself may affect the pattern of its transmission. For a discussion, see Brooks (2007); Makse and Volden (2011: 109-111); Mattei (1994: 195-196); Nicholson-Crotty (2009: 195-196); and Shaffer (2012: 249).

[229] Shapiro (2002: 609), Monroe (2007: 3).

[230] These analogies were developed by Almond and Genco (1977: 491-492). In cloud-like systems, chance, contingency, free will, and other sources of uncertainty rather than risk serve to undermine the possibility of prediction.

[231] Almond and Genco (1977: 494).

3,[232] which do not categorically rule out other outcomes or make firm predictions about when any given mechanism will produce diffusion, fall within such a range of soft projections. With future studies, and subject to the limitations of chance and complexity of the international system, further research may be able to refine and "harden" some of these hypotheses. Doing so would have benefits not only in advancing our understanding of diffusion, but would be particularly valuable for research with strong policy implications. In the case of oil, for example, a superior understanding of the pathways by which oil policies can be influenced could greatly improve the international community's ability to combat the resource curse. The following section applies the existing theoretical framework to generate soft predictions that form a first step towards advancing such a goal.

6 Oil Regimes: The Centrality of Learning and Emulation

The preceding analysis provides the basis for developing a series of testable hypotheses for explaining the diffusion pattern of the PSA and concession (and to a lesser degree, also the service contract). Before laying out the assumptions, it is useful to revisit the features of the oil regimes and the oil industry that are most relevant to the framework. First, concessions are perceived as the product of the North, for historical, emotional, and commercial reasons. PSAs, in contrast, are generally recognized to have originated in the South and address many of the developmental concerns of the South. Service contracts have also become a *de facto* product of the South. Using these origins, we can therefore assume a Northern exporter for all concessions

[232] By flexible and open-ended, I suggest that while given scenarios are strongly associated with certain mechanisms, the framework cannot say precisely how strong those pressures are, whether or not all of them will necessarily be present in a given case, or whether or not those pressures will amount to adoption.

and a Southern exporter for both alternative systems. Second, because most industrialized countries rely heavily on fossil fuels as the backbone of their economies and also rely heavily on imports, Northern states involved in the international oil business almost universally fall into the outward-oriented category when it comes to diffusion. Because of the association of openness with foreign and predominantly Northern investors, inward-oriented Southern states will tend to be associated with service contracts, while outward-oriented Southern states will tend to be associated with the PSA. Table 3 can therefore be reconfigured as outlined in Table 4. For ease of interpretation, the mechanisms with little anticipated effect have been removed from each cell.

TABLE 4. MECHANISMS OF DIFFUSION FOR PETROLEUM REGIMES

			Concession (Outward North)	Service Contract (Inward South)	PSA (Outward South)
Importer	North	Inward	**K**	-	-
		Outward	**K L E**	-	**L**
	South	Inward	-	**E**	**K E**
		Outward	**C K L E**	**K L E**	**K L E**

Table 4 lays out a number of hypotheses that will be the focus of the remainder of this project. Beginning with the North, it becomes evident that, based on the framework laid out above, diffusion of the service contract should not extend to the North, regardless of the preferences of Northern elites. PSAs might eventually diffuse to the North when the importing country's elite is outward-looking and there is a strong case for learning. Such a case would most likely have to involve a dramatic success story or unusual parallels between the exporting and importing country that make it appear to be a particularly relevant source of information.

Because Northern countries already utilize the concession system by default, the diffusion factors proposed here cannot be tested.

Focusing on potential importers in the South, I find significant differences in the mechanisms anticipated to lead to diffusion among inward-oriented or highly nationalist states. In these cases, maintenance of the concession system – or switching back to it from another system – is extremely unlikely by any mechanism owing because of strong opposition to Northern influence. In contrast, adoption of the service contract would be driven largely by emulation when countries strongly associate with others using this system, such as through regional ties or membership in a particularly influential organization such as OPEC. The same would hold true for those identifying with PSA states. Similarly, competition from PSA states could lead inward-oriented states to adopt PSAs on the grounds that it is the most advantageous system that they can afford to adopt without facing a loss of investment.

The choices of Southern states with outward-oriented elites may be somewhat more difficult to anticipate, as the same three mechanisms are operational in all three cases (with the addition of coercion when it comes to concessions). This suggests that the primary competitors of the potential policy importer play a significant role in the importer's choice of regime: where factors like resource endowment, political system, or industry maturity are most similar to the features of PSA states, the PSA would be favored as a model for diffusion. Where the country's profile is more similar to concession-based states, this system will be maintained, particularly in a low-price environment where competition for capital is intensified. The same emphasis on peer groups will also govern the source of learning: the more relevant or dramatic the lessons from a particular state appear, the more likely that the same system will be adopted in a potential importer. Finally, aspirations and views of appropriateness play an important role. Developing

countries that aspire to OECD or EU status might seek to signal their “normalcy” by maintaining a concession system. Alternatively, if they associate strongly with particularly successful developing countries, such as regional leaders in oil production, then they will gravitate towards those models.

Overall, while the expectations of this model for the oil industry are somewhat ambiguous when it comes to South-South diffusion, it is clear that coercion should play little to no role in explaining the success of the PSA. Rather than either the Blood for Oil of the corporate imperialism narratives, the model suggests that the South’s policy choices – even in an issue area of enormous political significance to powerful foreign actors – should be the result of choice, not imposition. Learning and emulation, combined with competition, are expected to have historically played a critical role in promoting the PSA with its superior ability to resolve conflicts over sovereignty and investor interests. As more information and success stories associated with PSAs become available, diffusion should be enhanced.

7 Conclusion

The framework presented above attempts to respond to the growing demand within the diffusion literature for predicting the causal mechanisms of diffusion while also addressing gaps within the diffusion literature. While the framework falls short of hard prediction, it offers a form of soft prediction that provides insights into the dynamics of South-South diffusion and offers an explanation for why mechanisms of diffusion may operate differently across states. It also attempts to incorporate considerations of domestic politics and to account for decisions among multiple policy options.

Apart from its theoretical contributions, the framework may be of value to policy-makers seeking to promote policies, laws, institutions, or norms abroad. First, by suggesting the circumstances under which certain mechanisms are most or least favored, the framework helps policy-makers target limited resources. Knowing the structure of international power, peer groups, and domestic elites, they can choose whether to emphasize coercive incentives such as conditional aid, learning-based tools such as international workshops and consulting services to facilitate knowledge transfer, or whether to emphasize potential status enhancements from adopting new policies. Second, the framework strongly advances the idea of agency. Importing countries are not simply passive "policy takers," but are policy makers, making choices over what policies are "best" in terms of both consequences and appropriateness. Likewise, exporters' preferences and actions can play an important role in determining patterns of diffusion.

The following chapters assess the framework within a single issue area, petroleum regimes. This case is particularly useful for assessing the framework outlined above as it involves policy models developed across both types of countries that have been exported to countries with different types of elites and levels of development. It has also been chosen because it is an issue of both tremendous material and symbolic importance for virtually all countries.

CHAPTER 3: GLOBAL PATTERNS IN THE DIFFUSION OF PETROLEUM REGIMES

1 Introduction

Since the publication of groundbreaking studies on Dutch Disease[233] and the "oil curse"[234] in the 1990s and early 2000s, academics and policy-makers have increasingly recognized the importance of natural resource governance. Organizations like the International Monetary Fund (IMF), the World Bank, and the Inter-American Development Bank (IADB), along with bilateral aid institutions, non-governmental organizations (NGOs),[235] and private contractors are taking an active role in petroleum fiscal system design. In evaluating the relative merits of specific contract clauses, taxation mechanisms, and the broader choice of petroleum regimes, these organizations overwhelmingly center their advice on achieving competitiveness and efficiency.[236] Yet as the preceding chapter has shown, competition is only one of several mechanisms that drive government policy. Factors like international pressure, financial incentives, increased availability of information about other countries' experiences, and the identification of role models worth imitating can also drive decisions over petroleum regimes. It is not enough to understand which laws or tools are most desirable; to effectively reform global petroleum governance, this improved understanding must be complemented by an effort to

[233] Dutch disease refers to the negative effect of oil exports on economic growth that is caused by distortions in the exchange rate. See Sachs and Warner (1995) for a full description and an international analysis.

[234] The "oil curse" became popularized by Ross (2001) who suggested a negative relationship between oil production and a country's level of democracy. He proposed three mechanisms underlying this relationship: rentierism, repression, and modernization, of which rentierism has garnered the most attention.

[235] Prominent examples include the Natural Resource Governance Institute (NRGI), Publish What You Pay (PWYP), and Columbia Law School's Negotiation Support Portal.

[236] This is reflected, in part, by a preoccupation with the question of "government take" and balancing the level of taxation with the ability to attract foreign direct investment, as seen in Daniel, Keen, and McPherson (2010), Cottarelli (2012), Johnston (2001), and van Meurs (2008). The focus on directly comparing competitiveness is equally common, most notably in Khelil (1995).

accurately identify – and even predict[237] – the key mechanisms behind the international spread of oil laws. I argue in the preceding chapter that the drivers of petroleum regime choice vary across countries based on their position in the international system (North/South) as well as the political inclinations of their domestic elites (inward-oriented/outward-oriented). Within the South, learning, emulation, and competition are major drivers of diffusion for all types of oil law, whereas in the North, those three mechanisms only support one form of oil law.

Historical evidence strongly suggests that the choice of oil law follows a process of diffusion. Countries have increasingly shifted from relying on general mining codes to specialized legislation for the oil sector,[238] and those laws overwhelmingly fall into just three categories: concessions, production sharing agreements (PSAs), and service contracts. These three regimes are found in small countries with no oil production, such as El Salvador, Nepal, and Malta,[239] as well as among the world's largest producers: Russia, Saudi Arabia, the United

[237] The importance of prediction to political science scholarship has been the subject of some debate, with some scholars, most notably members of the "Perestroika Movement" suggesting that it has been over-emphasized to the detriment of the field (Monroe 2007: 3; Shapiro 2002: 609). In principle, predictive theories have the benefit of falsifiability (where probabilistic predictions do allow some deviation from the predicted outcomes to account for outliers and errors), thereby contributing to the accumulation of knowledge as they are tested in different circumstances or expanded to explain a wider set of regularities (or deviations from expectations).

Prediction, however, is predicated on a closed system in which control is possible – analogous to a clock – whereas the political world may more accurately resemble an open system that is cloud-like. In this alternative conceptualization, chance, contingency, and free will collectively render prediction impossible (Almond and Genco 1977: 491-492). At best, the social sciences may only be able to find "soft" regularities in human behavior (Almond and Genco 1977: 494).

Even so, the possibility of finding such soft regularities is a worthwhile endeavor, particularly for areas of research with strong policy implications. While the theory explored in this dissertation does not make strong predictive claims, it does offer suggestions about which mechanisms of diffusion are more likely to govern in different circumstances. If successful, these insights can help guide the allocation of resources to increase the likelihood of effecting positive policy changes.

[238] In 2015, among 195 independent countries, 159 had identifiable petroleum regimes based on sectoral laws or individual contracts.

[239] All three countries utilize the PSA either exclusively or in combination with another system.

States, and China.[240] Although there is great diversity in the terms offered under individual regimes, the development of only three legal models over the past 150 years speaks to a remarkable interdependence of policy choice. The remainder of this chapter attempts to identify the four causal mechanisms – coercion, competition, learning, and emulation – that have driven those choices over the last fifty-five years.

Not only does a diffusion framework appear particularly suitable for analyzing oil regimes, understanding government choices among oil regimes can also advance our theoretical understanding of diffusion. The fastest-growing regime over the past half century is not the product of the global North or even of the most powerful producing countries. Instead, the PSA was an innovation of the South,[241] where it continues to enjoy popularity among producers of all varieties: frontier, mature, small, and large. This South-South diffusion pattern is anomalous in a literature that has tended to prioritize North-South and North-North cases.[242] This instance of diffusion therefore has the potential to shed light on questions such as how South-South diffusion might differ from the more commonly observed varieties and whether or not scholars need to better account for country type in their theories. Incorporating domestic politics in the form of elites further addresses and under-explored part of conventional diffusion research, which has tended to focus primarily on the international level.

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[240] Of these, Russia uses the concession and PSA, Saudi Arabia relies on service contracts, the United States applies concessions, and China uses the PSA.

[241] Although Indonesia was a member of OPEC at the time the PSA was implemented, it was still a fairly small producer compared to the Middle Eastern OPEC states. In 2008, falling export capacity led Indonesia to withdraw from OPEC for a seven-year period.

[242] For examples of discussions on the North-South bias in the diffusion literature, see Towns (2012: 181, 183), Marsh and Sharman (2009: 280), and Langer (2007: 622).

This chapter draws on the diffusion framework developed in Chapter 2. That framework explores the role of international and domestic factors in mediating the effectiveness of the four diffusion mechanisms. At the international level, it suggests that power imbalances and peer status can affect countries' openness to diffusion from different sources. It further suggests that elite preferences shape outcomes by selecting reference groups or role models. When applied to the oil industry, where each petroleum regime is associated with a different type of origin country, the framework anticipates different outcomes for the developed and developing worlds. In the former, competition, learning and emulation are likely to be the key drivers of diffusion, and that the model of choice will be the concession. In the latter, inward-oriented states are expected to gravitate towards service contracts and PSAs by way of emulation and competition. Outward-oriented states, on the other hand, are open to diffusion by all four mechanisms and might favor any of the three regimes. These findings in many ways contradict the traditional emphasis placed on coercion in the oil industry,[243] suggesting that coercion should only play a significant role in the diffusion of the concession to the outward-oriented South.

The chapter begins by outlining the broad patterns of petroleum regime adoption from 1960 to 2015. These patterns reveal a stark contrast between the choices of the North and the South while also illustrating the diversity amongst adopters of each of the petroleum regimes. Part 2 establishes the methodological approach to exploring these patterns more rigorously and to testing the theory outlined in the preceding chapter. It further outlines the operationalization of each of the diffusion mechanisms and other relevant factors that could affect regime choice. Part

[243] See, for example, Rodman (1988) and Lipson (1985). Both authors note that coercion was already losing much of its influence and the tendency among home governments and companies was towards accommodation.

3 presents the results of the analysis, and assesses the overall performance of the theoretical model, while Part 4 concludes the chapter. Both descriptive data and regression analysis strongly confirm the need to account for the differences between North and South, revealing significant differences in the ways in which the four mechanisms operate across these two country types. Quantitative analysis also supports the argument that elite type matters, albeit to a potentially lesser degree. Overall, evidence for petroleum regime diffusion supports both the general and many of the specific expectations generated by the theoretical framework. These findings suggest that international power dynamics, peer group effects, and elite preferences are conditioning the means by which diffusion takes place.

2 Descriptive Patterns of Diffusion

The history of petroleum regimes can, broadly speaking, be understood as the retreat of the concession. The concession is a system under which ownership rights to all production are held by the concessionaire, typically an oil company. Concessions are taxed via a combination of a royalty and income tax, grant companies broad operational discretion, and allow publicly traded firms to book reserves. At the other end of the spectrum lie service contracts: oil companies operating under these regimes are not permitted any form of equity ownership and instead are given fee-for-service compensation, where services may be far-ranging. Service contracts give only limited operational discretion and are considered highly unattractive by

private sector companies.[244] In between these extremes are PSAs: instead of granting ownership of all oil to the contractor, production is split between the government and private company at the export terminal. This typically translates into returns that are more favorable than service contracts but less attractive than concessions. The PSA typically grants strong investor protections while safeguarding sovereignty, as ownership is not ceded within the borders of the country. Over the course of the last 55 years, the concession – which dominated the world in 1960 when it was used by all but six independent countries[245] – has substantially given way to the PSA. Although 88 of 161 countries still used or permitted the use of concessions in 2015, 86 countries provided for PSAs – up from only one in 1960. Meanwhile, the service contract is now used exclusively by only ten countries, down from a peak of 17 in 1999.

The success of the PSA was far from guaranteed. Indonesia, its originator, developed the model over strong international oil company (IOC) objections and only after the entry of an independent willing to "defect" from the Majors' position.[246] Even then, Indonesia's revolutionary[247] development did not garner the same level of international attention as concurrent nationalizations by the Arab OPEC states. Thus, while the share of concessions began its decline in 1960, the winner from this shift initially appeared to be the service contract, with the number of states using this regime doubling between 1960 and 1970. It was only in 1974 that PSAs surpassed service contracts as a percentage of countries' oil regimes, at which point the

[244] Service contracts can be made more attractive by means of risk-based compensation, but the importance of the reserve booking metric means that even this modification remains more attractive for service companies than for oil producing companies.

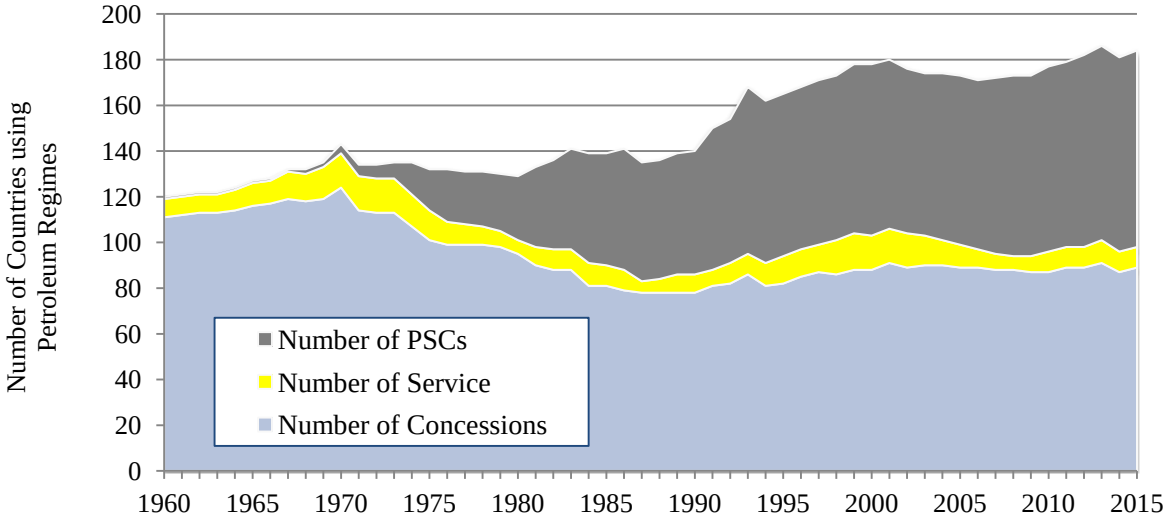
[245] Those were Argentina, Brazil, Chile, Mexico, Syria (then part of the United Arab Republic), and the USSR.

[246] Fabrikant (1973); AmEmb Djakarta (March 9, 1963).

[247] Machmud (1992: 180).

concession's share still held at 82 percent.[248] Thenceforward, the PSA grew in use almost every year for the next four decades while the number of service contracts fell for much of this period. Concession adoption reached its nadir over the 1987-1990 period, but the resistance of developed countries to changes in petroleum regime, coupled with the growing popularity of multi-regime systems allowed the share of concessions to stabilize between 50 and 60 percent (see Figure 3).

FIGURE 3. DISTRIBUTION OF PETROLEUM REGIMES, 1960-2015



Source: Author's calculations based on countries included in database

Disaggregated diffusion patterns, shown in Figure 4 through Figure 7, complete this picture, telling a remarkable story of *South-South* diffusion. First, PSAs – highlighted in yellow (when used exclusively) and orange (when used in conjunction with concessions) – have enjoyed success in nearly all parts of the world, but particularly among developing and transitioning countries in Asia, Africa, and Latin America. Fifteen years after its formal introduction in

[248] Concessions continued to account for 90 per cent of the world's oil regimes until 1971.

Indonesia (and nine years after it came into actual use), the PSA could be found in Asia (Myanmar, Vietnam, Malaysia, Bangladesh), the Middle East and Africa (Jordan, Oman, Syria, Algeria, Cote d'Ivoire, Libya, Nigeria, and Sudan), as well as in the Americas (Trinidad and Tobago, Chile, Colombia, Guatemala, and Uruguay). While some of these countries were minor players in international oil markets, their experience was nonetheless a source of information to newly independent countries and those contemplating energy reforms. By the mid-1980s, some of the world's largest oil producers (China, Nigeria, Libya, and Indonesia) had adopted this regime, increasing its influence. This success did not, however, translate into diffusion into the North until 2004. Even then, PSAs were limited to a handful of smaller countries with negligible oil reserves[249] until 2015, when Mexico implemented constitutional reforms that permitted the use of all three petroleum regimes.[250]

In contrast, service contracts (shown in dark grey), came into use in the North a decade earlier when Mexico acceded to the OECD. Following Mexico's energy reform, the service contract regime is no longer found in the developed world.[251] Originally associated with Latin America and the Soviet Union, service contracts have instead come to be predominantly associated with major producers in the Middle East, particularly Saudi Arabia and, more recently, Iraq. Countries that have abandoned this regime have shown no clear preference

[249] In order of adoption, those countries are: Malta (2004), Cyprus (2007), Chile (2010), and Croatia (2013). Only Chile and Cyprus exclusively use PSAs.

[250] Formally, Mexico does not permit the use of "concessions," instead only allowing a functional equivalent.

[251] It is important to note that service contracts as an instrument are common in all countries, but service contracts as a petroleum regime – where they are the sole vehicle for oil company investment – are quite rare.

FIGURE 4. GLOBAL PETROLEUM REGIMES, 1960

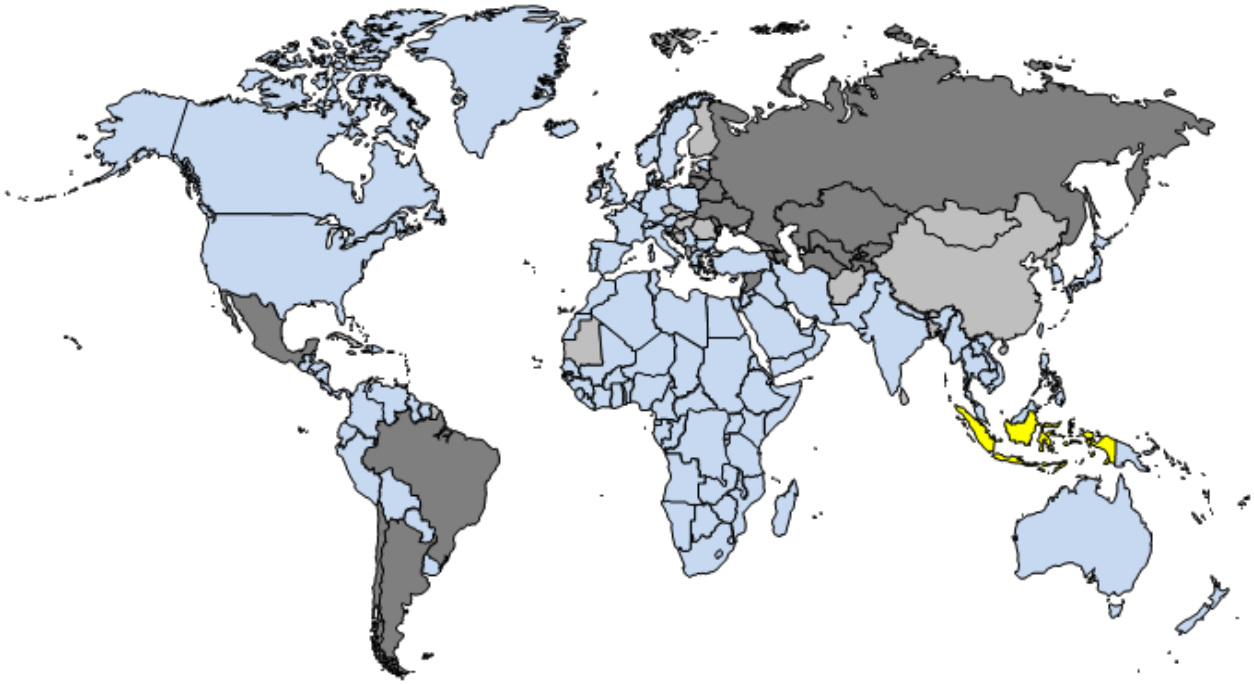


FIGURE 5. GLOBAL PETROLEUM REGIMES, 1980

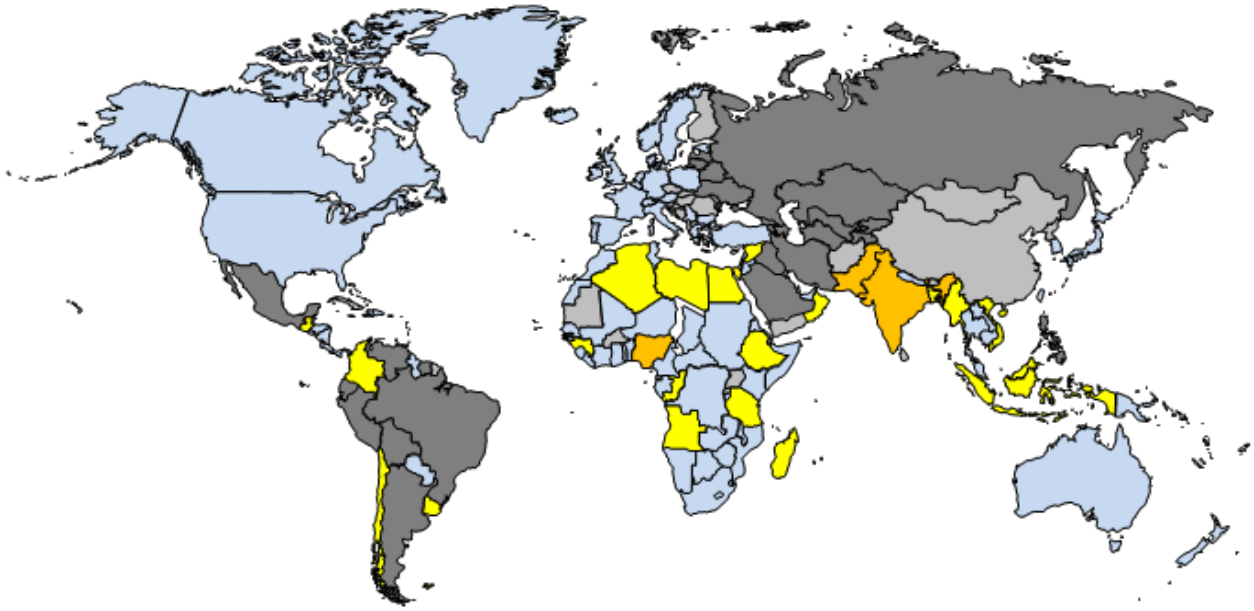


FIGURE 6. GLOBAL PETROLEUM REGIMES, 2000

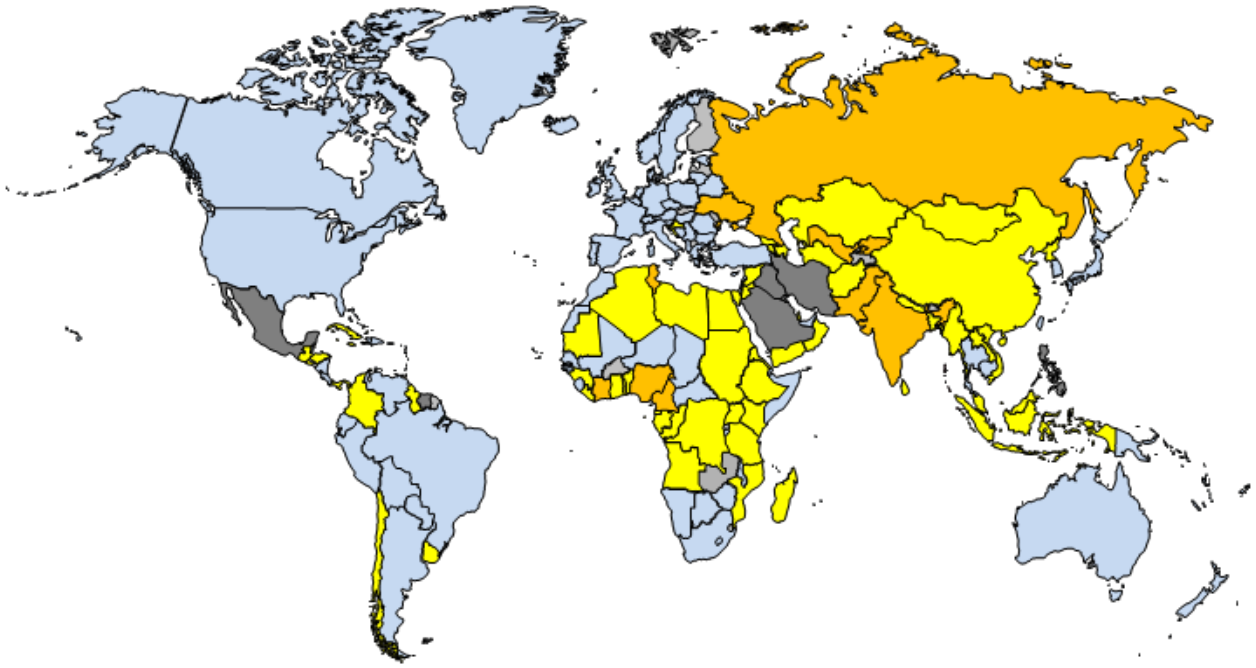
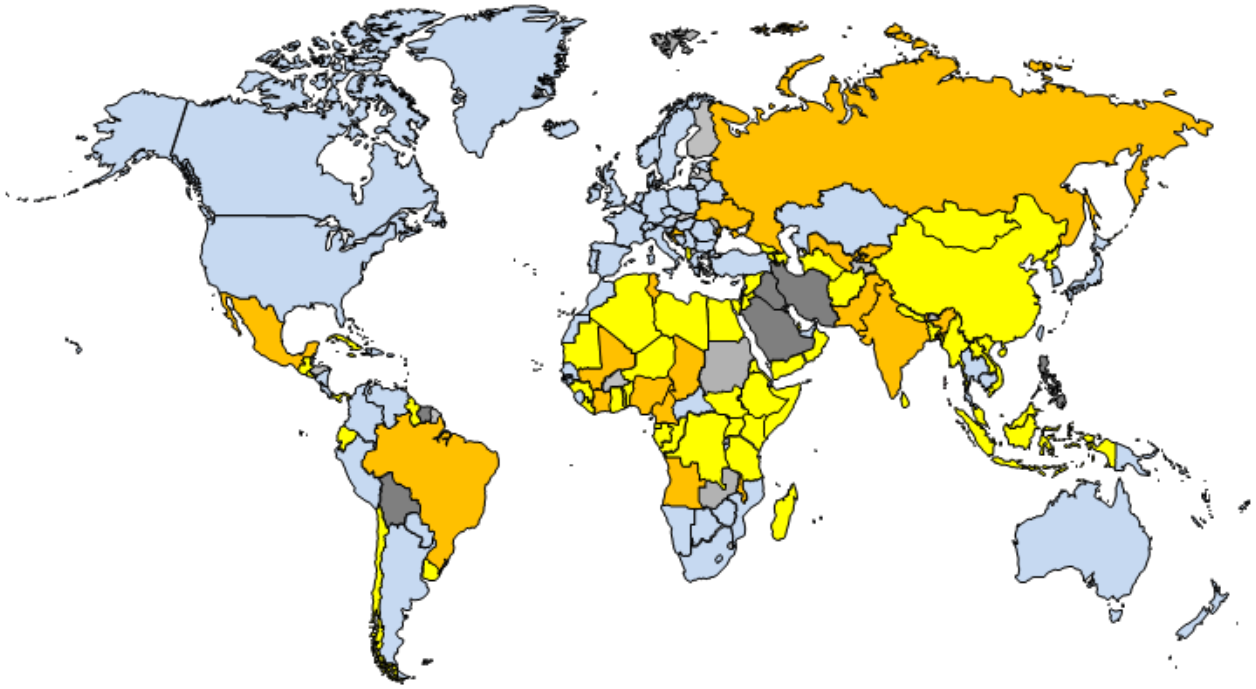


FIGURE 7. GLOBAL PETROLEUM REGIMES, 2015



between the two alternatives, although it is striking that many have undergone more than one subsequent change of petroleum regime.

Finally, exclusive reliance on concessions has become rare outside of the North. In 2015, only 33 countries in the global South used the concession system alone – just 13 of which had any oil production. While still retained as an option in many oil laws that enable both concessions and PSAs, the concession frequently remains the less-preferred regime, being used for less attractive acreage. Within a generation, the concession has gone from the world's default petroleum regime to being the standard only in the North. In the South, the concession has been reduced to, at best, one of several options and, at worst, a political impossibility.

3 Testing for Causal Mechanisms

This study begins by developing three separate logistic regression (logit)[252] models that vary by countries' petroleum regime type. It proceeds by complicating the models first by including interaction terms to reflect the theoretical importance of country type in influencing the relative strength of the diffusion mechanisms. A third variation in the form of a multinomial logit model is introduced in order to offer a direct comparison of the factors affecting regime

[252] Because the outcome is a categorical variable (regime type), a standard linear regression model is not appropriate, as several modeling assumptions are violated. Apart from the choice of model type, an additional concern raised by Tomz, King, and Zeng (2001) is the question of whether the rarity of petroleum regime change might bias results. In order to account for this possibility, a model for reducing bias, such as those authors' Rare Events Logit or David Firth's method for reducing bias might be appropriate. These methods, unfortunately, do not permit the inclusion of controls for country fixed effects. As a result, they were not used for the primary analysis shown below, although in an analysis that is not reported here Firth's method was run on the data without the use of country clusters to ensure that the results are not substantially affected by the rarity of change in the dependent variable.

choice.[253] Because petroleum markets have varied significantly over time and past choices are strong predictors of current ones, the models account for temporal dependence by including dummy variables for each year.[254] Based on the availability of data, the timeframe covered under the analysis is 1974-2014. For all but the multinomial logit model, I further control for country fixed effects in order to account for systematic differences in the political and economic environments across countries.[255]

In most countries, checks and balances, legislative deliberations, legal hurdles, and other factors prevent laws from passing within a single year of precipitating events. With the exception of time-invariant variables, I therefore include a three-year lag on all independent variables. This time span represents the average number of years from independence to the passage of the first oil law in a sample of 50 countries.[256] For ease of interpretation, a number of variables are also standardized to have a mean of 0 and a standard deviation of 1. Finally, the analysis is restricted to countries during the years of their independence.[257]

[253] Although in many ways the most effective at testing the hypotheses generated in Chapter 2, the results of the multinomial logit model must be approached with caution. It exists here only in a simplified form that omits country fixed effects and interaction terms, inclusion of which prevent the model from converging.

[254] This approach follows Beck, Katz, and Tucker (1998).

[255] In order to do so, I employ clustering by country, which inflates the error term.

[256] The actual number of years between consideration of legal change and actual passage of a new law can, in some cases, be significantly higher. Nigeria, for example, has been said to have been debating changes to its oil law for the past eight years (Windham 2016) and Iraq has yet to pass an oil law since the US invasion of 2003. Although not considered here, it is also worth noting that passage of an oil law does not necessarily guarantee enforcement or implementation, and an oil law is not an absolute requirement for attracting investment.

[257] An analysis of countries over their entire histories was also completed, and is broadly similar to the results of the independent country-only analysis.

3.1 Dependent Variable

This study utilizes three binary dependent variables, ***PSA***, ***concession***, and ***service contract*** that are each coded 1 for countries that use the specified petroleum regime either exclusively or in conjunction with other ownership systems, and 0 otherwise.[258] This original data is sourced from a combination of primary and secondary sources and covers the period from 1959 to 2015. Specific coding decisions are outlined in the code book and data set themselves; where possible, data is drawn from each of 207 countries' Ministry of Petroleum, Ministry of Energy, Ministry of Mining, National Oil Company, or Investment Promotion Agency to identify the enabling legislation and model contracts. For countries that do not have such legislation, I rely on reports about *de facto* regimes, including awards of contracts to companies as reported in the press.[259] Because many countries do not report or translate their historical legislation in any depth, I rely on secondary sources for much of the period preceding 1980. In particular, I rely on reports by the U.S. Geological Survey on the world's petroleum and mining fiscal regimes (Ely 1960, 1970, 1971, 1974), as well as on two volumes by Barrows (1983, 1993) as well as by Johnston (2001). Ernst & Young's global tax guides and international fiscal system surveys by law firms and the Extractive Industries Transparency Initiative are used as further supplements.

[258] In the case of the multinomial model, I instead use a single dependent variable, ***oil regime*****,** which ranges from a value of 1 to 4, where 1 denotes concessions, 2 represents PSAs, 3 indicates service contracts, and 4 stands for mixed systems that combine concessions and PSAs. Over the entire data set, this mixed option accounts for roughly 7 percent of all cases, just slightly more than service contract regimes.

[259] Countries lacking oil laws largely fall into two groups. The first group of countries has no existing oil production and is believed to have little to no oil reserves and therefore has little perceived need for such a law. In several instances, oil exploration could actively undermine the country's major industries, notably tourism. The second group of countries, located in the Middle East, has vast known reserves that are tightly controlled by authoritarian governments. In these instances, deals are infrequent and negotiated on a case-by-case basis.

Where conflicts exist among sources, I privilege information provided by governments.[260] Although portions of this dataset exist elsewhere, to the author's knowledge, this database represents the only free and comprehensive survey of international petroleum regimes, covering not just major oil producers, but all countries regardless of their resource base.

3.2 Independent Variables

There are four treatment variables that coincide with the four causal mechanisms: coercion, competition, learning, and emulation. As outlined in Chapter 2, these mechanisms are stylized, and therefore do not directly translate into easily measurable variables. The operationalization approach taken here is to distinguish among the four mechanisms by process rather than outcome. In the latter approach, one might assume, for example, that learning leads to superior outcomes such as higher resource rent or political stability and consequently would measure diffusion by way of other countries' responses to such successes. A process-based approach, on the other hand, seeks to use indicators of the presence of the mechanisms themselves, such as inter-governmental linkages. This choice is driven by three factors. First, the outcomes of regime choice have not been extensively studied and their effects are difficult to separate from the specific terms of the contracts themselves.[261] Second, many of the outcomes governments are likely use in their decision-making are not publicly or systematically available. For example, reporting of government revenue from oil is notoriously lacking in transparency.

[260] Such conflicts are rare (and increasingly so as the PSA structure has become more well-known), but can arise when countries use novel descriptors for their laws or when there is a mismatch between the label and the characteristics of the law.

[261] From an economic standpoint, all three regimes can be made to look identical through modifications to their specific terms. Even in the areas where there is a tangible difference (such as the rhetorical benefits from being able to claim ownership within one's borders), the outcomes are difficult, if not impossible to measure.

Revenue is also extremely sensitive to factors such as depreciation that are not captured in headline tax rates and vary tremendously over a single project's life. Finally, many of the outcomes that would drive diffusion by different mechanisms are overlapping: Learning might be prompted by another country's success in attracting investment from multiple Supermajors, but the presence of these companies could just as easily be an indicator of successful corporate coercion. A process-based approach that is grounded in deep industry knowledge, I argue, is more likely to successfully differentiate among the four mechanisms than an outcomes-based approach.

Beyond the difficulty translating complex and overlapping concepts into easily observable phenomena, there is a broader problem inherent to international relations research, namely that of data quality and availability. Relatively few measures exist that have been collected on all countries in the international system, and even fewer of those are available for the entire lifetime of the PSA. In choosing operationalizations of treatment and conditioning variables, this study privileges measures that maximize geographic and chronological scope, even if at times that choice results in some loss of precision.

The measure of ***coercion*** used in this study emphasizes the material importance of oil revenues to the national economy. Specifically, coercion is operationalized as oil rents measured as a percentage of GDP. [262] Data are available from the World Bank from 1970 to 2015 for up to 182 countries. I assume a negative relationship between oil rent and the coercive power of

[262] Oil rents are described as follows: "The estimates of natural resources rents are calculated as the difference between the price of a commodity and the average cost of producing it. This is done by estimating the world price of units of specific commodities and subtracting estimates of average unit costs of extraction or harvesting costs (including a normal return on capital). These unit rents are then multiplied by the physical quantities countries extract or harvest to determine the rents for each commodity as a share of gross domestic product (GDP)." (World Bank, n.d.). For further details on the methodology for measuring oil rent, see Jarvis et al. (2011).

external actors.[263] Specifically, as the share of oil rent in the economy increases, the more resources the state has available to either fund development itself or to bring in external service contractors. Kuwait, which in 2014 had the world's highest share of oil rent relative to GDP, at a level of 53.4 percent, can afford to profitably rely on Kuwait Petroleum Company and eschew foreign investment. In countries that lack a strong state presence in the oil sector yet nevertheless have high oil rents, the relationship should be similar: the existence of high rents in this case are most likely indicative of a large investor base, reducing the government's receptivity to individual company or country demands. On the other hand, countries with a lower level of oil rent – whether due to high production costs or low output levels – are far more likely to give in to company demands for liberalization to the extent that they desire investment in the sector.[264] An alternate measure of coercion, foreign direct investment (FDI), is reported in the statistical appendix.

The operationalization of ***competition*** used in this study relies on figures of crude oil production. Although oil production has some overlap with oil rent in its implications,[265] the

[263] A potential counterargument to this operationalization is that, as the significance of the oil sector in the national budget increases, the more sensitive the government is likely to become to investor demands. This is exacerbated by oil price volatility, which tends to affect governments more than private companies, giving companies a particular advantage in times of low oil prices. As Weiner points out, "High tax rates on both state-owned and private oil companies often leave oil-exporting governments more exposed to oil-price fluctuations than the companies they tax. Despite the enormous magnitude of this exposure, and the potential of derivatives contracts for hedging it, these governments' use of derivatives to reduce price risk is very limited" (Weiner 2000: 2).

[264] The relationship may not, in fact, be linear, with countries that have no oil rents being largely insensitive to potential investor demands as they do not rely on oil for their fiscal well-being. Furthermore, the relationship may be weakened at times of low oil prices, when fiscal dependence might undercut the government's bargaining position.

[265]Similar to oil rent, as a country's production of oil increases, its bargaining position vis-à-vis corporations and consuming countries increases. This permits greater latitude in the choice of petroleum regime. This is for two reasons. First, higher production levels are linked to more attractive geology and production potential and therefore will create greater interest from future investors. Second, existing production provides host governments with a large source of income, making them less dependent on new investments to fund production or other programs. There are

measures differ in two ways. First, high levels of oil production – as opposed to rent – necessitate high levels of new investment simply to maintain current output levels, particularly in countries that have reached a production plateau, as recently experienced by Mexico. Although new production can be self-financed, private sector investment is often a crucial component of reserve replacement (particularly in terms of willingness to invest in exploration). Thus, the higher a country's production levels, the higher its investment needs and the more it will have to at least be cognizant of its competitive position. Second, higher levels of production are usually associated with high levels of exports, engagement in international trade, and battle for market share. Although competition as discussed in Chapter 2 is primarily a concern over competition over equity, trade competition is also likely to raise awareness of the need to consider other countries' competitive advantages. Production figures are drawn from the Ross oil and gas dataset as reported in the Quality of Governance standard dataset. These figures are a combination of three sources: from 1932 to 1969, oil production figures are drawn from the U.S. Geological Survey's *Mineral Yearbook*, for 1970-2000, the data are drawn from the World Bank's Wealth of Nations database, and from 2001-2014, data are drawn from the U.S. Energy Information Administration's international energy statistics, all converted or reported in metric tonnes.

Learning is most likely to take place when information about a policy's effectiveness is both available and deemed to be relevant. In the petroleum industry, such information

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some limits to this argument, as high levels of production can also result in higher government expenditures on infrastructure or social programs and therefore result in a need to continue to attract new funding.

In spite of similar relationships to bargaining power, the two measures have a surprisingly low level of correlation, reaching just 0.32.

transmission most commonly occurs through private experts hired directly by the government or through an international aid agency. It also takes place through formal and informal discussions among high-level government experts. In the absence of systematic data on cross-national private activities, I focus on the learning that takes place through inter-governmental petroleum organizations, specifically the Organization of the Petroleum Exporting Countries (OPEC), the Organization of Arab Petroleum Exporting Countries (OAPEC), the Latin American Energy Organization (OLADE), the African Petroleum Producers' Association (APPA), the International Energy Forum (IEF), the International Energy Agency (IEA), and the Energy Charter.[266] These seven organizations are primarily or exclusively focused on activities in the petroleum industry and include policy coordination and/or technical cooperation among their primary functions. For example, APPA's program of actions includes seminars to lower "communication barriers" and encourage exchange of "information on experiences, giving rise to the awareness on strength and weaknesses of the upstream sector in the Member Countries."[267] Similarly, OLADE has formed a "South-South Cooperation program" that includes sharing regional experiences and best practices.[268] International organizations therefore build networks and ties of information exchange that allow host governments to develop expectations about the likely outcomes of specific types of reform.[269]

[266] Although these are primarily regional organizations, even organizations like OLADE have some cross-regional memberships and are therefore likely to contribute to international, rather than strictly regional, diffusion. Over half of all countries in the dataset were members of at least one international energy organization in 2015.

[267] APPA (2017).

[268] OLADE (2017).

[269] There may also be some degree of socialization taking place in these organizations, moving from a logic of consequences towards a logic of appropriateness in which the fact that a regime's adoption elsewhere becomes the guiding logic. I would argue that membership in multiple organizations tends to weaken the tendency towards

More specifically, I develop three measures of learning over three steps: First, I track membership in all seven organizations by country-year. Second, I calculate each organization's proportion of countries using the PSA, the concession, and the service contract. Third, for each country-year, I calculate an exposure score on a scale of 0 to 100 that is the mean of the regime-specific averages for all of the organizations in which the country was a member. Countries that are not members of any international energy organizations are given a learning score of zero.[270] For example, in 2013, Afghanistan, which uses a PSA, was a member of the IEF and the Energy Charter. These two organizations had a PSA share of 51% and 32%, a concession share of 48% and 32%, and a service contract share of 8% and 0%, respectively. As a result, Afghanistan's *PSA learning* is 41 for 2013, while its *concession learning* is 29 and its *service learning* is 2. Thus, Afghanistan's direct, government-level and industry-specific exchanges occur most frequently with other PSA-using countries, with almost no exposure to countries that rely exclusively on service contracts. More generally, there are 67 countries in the dataset that – owing to having no memberships in international energy organizations – have a learning score of 0 across all three regime types. The maximum learning score for PSAs and concessions is 100, while it is only 46 for service contracts. The mean PSA learning score over all independent countries from 1960 to 2015 is 35, is 53 for concessions, and is just 10 for service contracts.[271]

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imitation of a single group. Moreover, the language most commonly adopted in these organizations is that of knowledge exchange rather than policy harmonization, suggesting an explicit emphasis on learning.

[270] This assumption is clearly an oversimplification of the learning process and would suggest that countries have no other sources of information about petroleum regimes. Its effect on the analysis is that it is likely to lead to an underestimation of the effect of learning on regime choice.

[271] These mean values are considerably higher for independent countries than for all countries.

As with learning, I break ***emulation*** into three separate variables: *concession emulation*, *PSA emulation*, and *service contract emulation*. These variables are based on the assumption that when choosing a model to imitate, governments tend to look in their own neighborhoods and tend to associate size with success.[272] Thus, the measures seek to identify regional leaders and their regimes, constructed over several steps.[273] First, all countries are placed into six groupings: Latin America, Eastern Europe and the Former Soviet Union, North America and Western Europe, Asia-Pacific, Middle East-North Africa, and Sub-Saharan Africa.[274] Second, the leading producer – measured by total oil output per annum – is identified in each region and is classified according to its petroleum regime.[275] Third, concession emulation is coded 1 if the leading producer uses the concession system and 0 otherwise, and likewise for PSAs and service contracts. Approximately 51 percent of countries are coded 1 for concession emulation and 48 percent for PSA emulation. Service contracts, being more rare, account for only 17 percent of observations.

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[272] Although this may not be true for government officials well-versed in the oil industry, governments seeking to gain legitimacy through imitating "successful" cases might choose to pursue such a simplified logic in order to reflect the thinking of their publics. Although China might otherwise be a valuable source of learning, the citizens of Chad might see little relevance or know too little about that example to give the government any political benefits from imitation.

[273] An alternative to this emulation measure that is based on the theoretical expectations outlined in Chapter 2 is reported in the statistical appendix, along with a description of the variable.

[274] These groups largely coincide with typical classification used in oil-specific databases such as the *BP Statistical Report* and the U.S. Energy Information Administration, with one significant change: the U.S. and Canada have been combined with Western Europe to reflect the prominence of the U.S. and Canada in the "Western" oil industry and peer effects within the North. Although it may be argued that the oil industry is global and therefore a single country may be identifiable as the leading country, interviews consistently failed to identify a single country or set of countries that are considered to be global leaders in terms of petroleum regime (this is not the case for specific subsets of petroleum regimes, such as sovereign wealth funds, where Norway is repeatedly mentioned as a leader).

[275] Because there is some change in the identity of leading producers (and their petroleum regime), each of the emulation variables is reported as a lagged variable, although it should be noted that the leading regime is surprisingly invariant over the period covered in the dataset.

Finally, in order to explore the conditioning role of ***country type***, I include a measure – used in two versions of the model as an independent variable and in another version as part of an interaction term – that reflects North/South and inward-/outward-oriented elite differentiations. Core countries are defined as members of either the European Union (EU) or the Organization for Economic Cooperation and Development (OECD), whereas periphery countries are not members of either of these organizations. Elite orientation is determined by a country's score on the Dreher, Gaston and Martens KOF Globalization Index. This index measures three forms of openness to globalization: economic, political, and social, which cover trade and investment flows, trade and capital restrictions, personal contacts, information flows, cultural proximity, and political ties in the form of embassies, international organization membership, treaties, and several other measures. These openness scores are available on a scale of 0 to 100, with a mean of 45.91.[276] Countries that score at or above the mean are coded 1 to denote an outward orientation, while countries scoring below the mean value are considered inward-oriented for the purposes of this analysis, and are coded 0.[277] Based on these classifications, three types of countries are reported: North, Outward South, and Inward South.

3.3 Control Variables

In addition to indicators for the causal mechanisms of diffusion, several conditioning variables are also included. These include ***GDP per capita***, drawn from Penn World via the Quality of Governance database, whose inclusion accounts for the possibility that ownership

[276] There are 24 separate indicators that make up the index, which are subjected to different weights to make up aggregate indices. In the case of the overall globalization index, Economic globalization accounts for 36%, Social Globalization for 37% and Political Globalization for 27% of the aggregate score (Dreher 2006).

[277] It is worth noting that there is a tendency towards greater openness among most countries over time.

systems are in part determined by a country's level of economic development, which itself may be correlated with economic diversification. Other conditioning variables include ***political constraints***, consisting of the Henisz (2005) PolCon3 variable as reported in the Quality of Governance dataset. This variable attempts to measure the possibility of policy change given both institutional constraints and actor preferences within each country and may therefore serve as an indicator of how easily regimes may change. The model also accounts for ***oil price,*** drawn from Ross's oil dataset.

4 Results

The following section is broken into three parts. First, I report the results of an analysis that tests for the influence of the four mechanisms of diffusion on the choice of petroleum regime and accounts for country type using a dummy variable. Second, I present a more detailed model that includes a series of six interaction terms between the mechanisms of diffusion and country type.[278] Third, I develop a simplified model that omits country fixed effects but offers a means of directly comparing the factors influencing regime choice across countries and also includes a fourth regime category, a *mixed regime* in which concessions, PSAs, and service contracts are all permitted under national law or custom.

All three of models are used to test a series of 36 hypotheses concerning the direction and significance of the effect of each of the mechanisms of diffusion. The first model is useful in establishing the relative significance of the four mechanisms of diffusion as well as other factors

[278] The difference in these approaches is that the former approach allows the intercepts to vary, whereas the latter varies both slope and intercepts (Williams 2015).

that may affect the choice of petroleum regime. The model controls for the effect of country type independently of the diffusion mechanisms. The second model instead interacts the three country types with the diffusion mechanisms, assuming that country type not only matters, but affects the way in which the mechanisms behave. While this second model is a more accurate reflection of the theory, it carries several drawbacks and the results should be interpreted with caution. Specifically, extensive use of interaction terms means that coefficients are being estimated using fewer data points.[279] Combined with an uneven distribution of the data across petroleum regimes and country types,[280] this means that the estimates are more sensitive to decisions made by individual countries. Additionally, and discussed further below, interaction terms in non-linear models can be difficult to interpret. The third model has the advantage of using a single dependent variable, which allows the size and direction of the independent variables to be directly compared. As a result, the third model is able to assess the relative significance of each of the causal mechanisms as they pertain to overall petroleum regime choice. This model, however, is only usable in a simplified form that omits interactions terms and country-fixed effects. This means that Saudi Arabia in 1970 is treated as independent from Saudi Arabia in 1971. The weaknesses inherent in each of the models can be overcome by considering the results of each along with how they complement each other. Together, they strongly demonstrate the value of the theoretical framework developed in Chapter 2 for thinking about diffusion and the importance of differentiating between North and South as well as different types of elites.

[279] In an effort to address this issue, the inward- and outward-oriented North are collapsed together in this analysis as the frequency of inward-oriented North is negligible and because the theoretical expectations between the two Northern country types do not differ substantially.

[280] For example, service contracts make up fewer than 10 percent of petroleum regime observations and the North accounts for little over 15 percent of countries.

4.1 Testing Diffusion Mechanisms

The most fundamental argument developed here is that both a law's origin and the nature of the receiving country affect its method of transmission. Even when multiple laws pertain to the same issue and appear interchangeable,[281] international and domestic factors combine to encourage laws to diffuse by different mechanisms. The results of the general model, presented in Table 5, strongly support this conclusion. They suggest that the mechanisms underlying the choice of petroleum regime differ according to whether the law being exported is a concession, PSA, or service contract.[282]

Of the three variants, the service contract model performs best, with all mechanisms operating as anticipated. Service contract use by the leading regional producer, membership in organizations with other service contract users, and high levels of oil production are all positively and significantly associated with service contract adoption within three years. On the other hand, and as anticipated, oil rent appears not to influence service contract adoption, although the direction of the effect is positive, suggesting that higher levels of oil rent as a percentage of GDP are positively associated with state ownership.

The findings for the other regimes are slightly more mixed, offering support for only some of the hypotheses. Emulation appears to have both a statistically significant and positive

[281] See Van Meurs (2008: 3), who states that "There are no inherent differences in the level of government take and government revenues that can be obtained through the three types of upstream government petroleum regimes. It is possible for any petroleum project to create fiscal terms that result in exactly the same government take, under particular assumptions of prices, costs and the time value of money, for each of the three regimes."

[282] It is important to note that the size of the covariates presented across the three columns are not directly comparable and cannot be used to determine whether the effect of a given independent variable is greater in one case than another based on Table 2. This is because both the dependent variable and two of the independent variables (learning and emulation) differ across each of the three models.

effect on PSA adoption. Although the coefficient for learning has the anticipated positive sign, it lacks statistical significance, and the direction of the competition effect is not as expected. The third model also only partially accords with expectations: Countries where oil rent makes up a larger share of the economy appear less likely to adopt the concession system, providing support for the hypothesis that coercion in the form of oil rent is negatively and significantly associated with concession adoption. The direction of the learning and emulation effects are as anticipated, but like in the PSA case, not statistically significant.

With respect to control variables, political constraints appear to be positively associated with service contract adoption. This might suggest that highly constrained governments[283] gravitate towards national oil ownership. Higher levels of economic development in the form of GDP per capita appear to be linked to concession adoption. Contrary to research on oil price cycles that links nationalization and liberalization to changes in oil prices,[284] Table 5 suggests that oil prices have neither a statistically nor substantively significant effect on petroleum laws.

[283] Countries that score highly on political constraints values include Belgium and the Netherlands, Brazil after 1991, 1960s Venezuela, as well as Papua New Guinea and the Democratic Republic of the Congo in the first decade of the 2000s (Henisz 2002).

[284] Studies that examine governments' propensity to expropriate the oil and gas sector include Stevens (2008a; 2008b), Wälde (2008), Guriev et al. (2008), Joffé et al. (2009), and Bressand (2009). Colgan, Keohane, and Van de Graaf also locate the origin of energy regime change (separate from nationalization) in oil prices, suggesting that it is a major source of satisfaction or dissatisfaction with the status quo (2012: 121).

TABLE 5. LOGIT MODEL, EFFECTS OF DIFFUSION MECHANISMS ON PETROLEUM REGIME

	Concession	**PSA**	**Service Contract**
Learning	0.04	0.01	0.12**
(*lagged*)	(0.02)	(0.01)	(0.04)
Emulation	0.57	0.93*	1.07*
(*lagged*)	(0.41)	(0.50)	(0.63)
Oil Rent	-0.46**	0.31	0.15
(standardized, lagged)	(0.23)	(0.23)	(0.23)
Oil Production	-0.00	-0.46	0.57**
(standardized, lagged)	(0.18)	(0.32)	(0.17)
Oil Price	-0.01	0.01	0.00
(lagged)	(0.03)	(0.03)	(0.01)
Political Constraints	0.50	-1.31	2.51**
(standardized)	(0.84)	(0.87)	(0.69)
GDP per Capita *(standardized, lagged, log)*	0.62**	-0.48	-0.05
	(0.30)	(0.36)	(0.54)
Country Type			
(*base category: North)*			
Outward South	-2.08*	2.83**	0.42
	(1.22)	(0.90)	(1.81)
Inward South	-1.87	2.96**	-0.16
	(1.15)	(0.79)	(1.55)
Years (*omitted)*			
Constant	-0.82	-2.97**	-5.42**
	(3.27)	(1.31)	(1.59)
Pseudo R^2	0.3234	0.3541	0.3417
Log Pseudolikelihood	-1336	-1268	-667
Observations	2851	2851	2841
Clusters	119	119	

Notes: * denotes $p < 0.10$, ** denotes $p < 0.05$. Standard Errors are reported in parentheses.[285]

[285] Although there is a strong norm for reporting statistical significance, this criterion is not without controversy. First, there has been some debate about whether statistical significance has been elevated above substantive significance in importance, with discussions of the latter sometimes lacking altogether (Ziliak and McCloskey 2014: 7). Moreover, statistical significance tests are sensitive to sampling decisions and may reflect relatively little about

To further assess the substantive role of these variables, the average marginal effects are presented in Table 6, holding all other variables at their means. The results are broken down by country type. They offer several insights. First, at the mean values of all variables, the North is not meaningfully affected by any of the mechanisms of diffusion. Second, within the developing world, the distinction between outward- and inward-oriented elites matters most in the cases of emulation and oil rent. Third, contrary to the rhetorical emphasis placed on competition, oil production has a statistically significant effect only in one regime type. Finally, the size of the effect of learning appears negligible, but has the potential to be highly significant depending on exposure.

TABLE 6. AVERAGE MARGINAL EFFECTS AT MEANS, BY COUNTRY TYPE

	Concession			**PSA**			**Service Contract**		
	North	Outward South	Inward South	North	Outward South	Inward South	North	Outward South	Inward South
Learning	0.00	0.01*	0.01*	0.00	0.00	0.00	0.00	0.01**	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Emulation	0.02	0.11	0.13	0.03	0.18*	0.20*	0.04	0.10*	0.08*
	(0.01)	(0.08)	(0.09)	(0.02)	(0.10)	(0.10)	(0.04)	(0.05)	(0.04)
Oil Rent	-0.02	-0.09**	-0.10**	0.01	0.06	0.07	0.00	0.01	0.01
	(0.01)	(0.04)	(0.05)	(0.01)	(0.04)	(0.05)	(0.01)	(0.02)	(0.02)
Oil Production	-0.00	-0.00	-0.00	-0.01	-0.08	-0.10	0.01	0.06**	0.04**
	(0.01)	(0.03)	(0.04)	(0.01)	(0.06)	(0.07)	(0.01)	(0.02)	(0.01

More specifically, the results suggest that, among developing countries, learning about the concession has the potential to outweigh any other variable in the magnitude of its effect. When it comes to anticipating adoption of concessions and service contracts, a twenty-five-point

the scientific questions being explored (Ziliak and McCloskey 2014: 14). This study deals with this controversy by reporting on statistical significance but focusing above all on direction of effect and size of estimated effect.

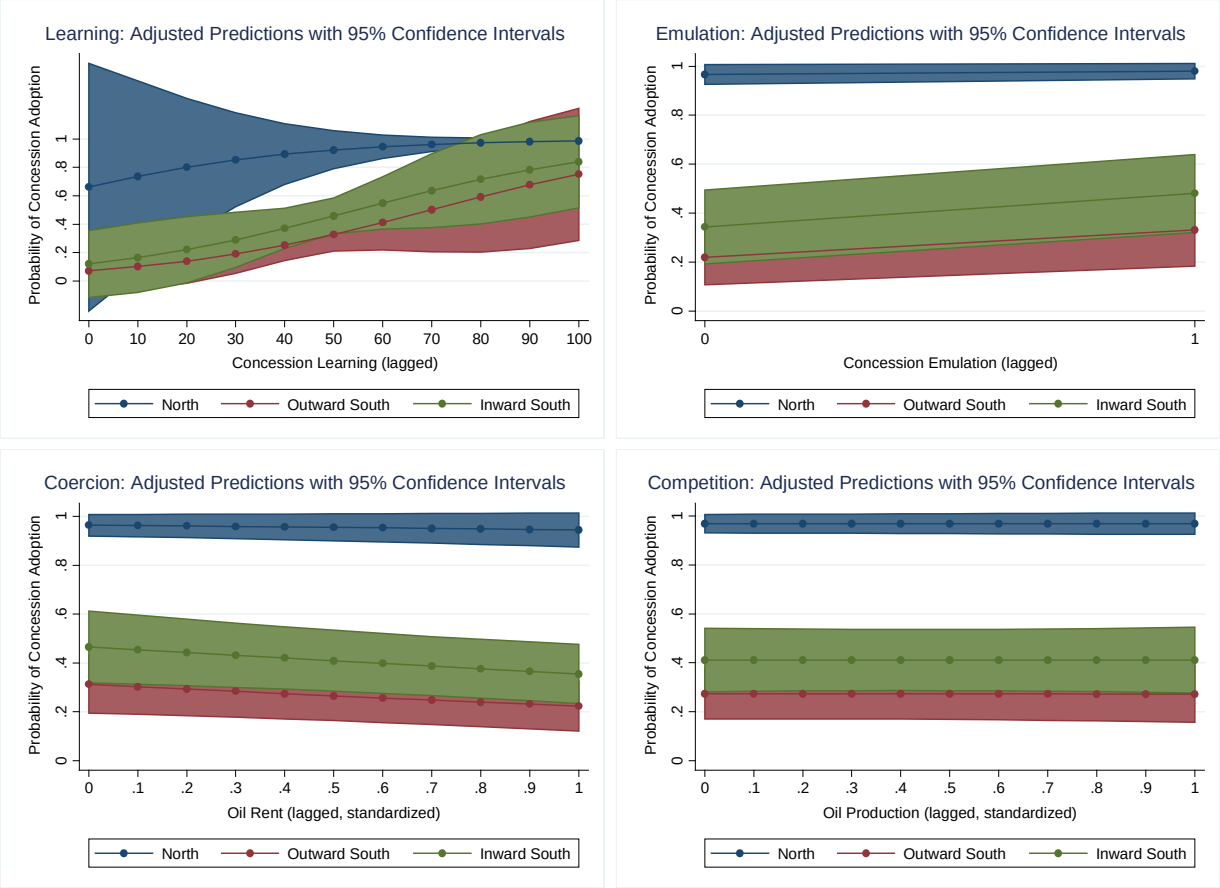
increase (on a scale from 0 to 100) in exposure to a selected petroleum regime in the South is equivalent to or greater than the full effect of having a "role model" country using either of those regimes. This effect is matched only by oil rent or oil production levels that are two to three standard deviations above the mean. Even so, among developing countries emulation does appear to have a potentially large effect for all three regimes, although the effect is statistically insignificant in the case of concessions. Similarly, oil rent has a large negative effect on concession and (to a lesser extent) PSAs adoption, nearly matching the effect of emulation in the former case. Finally, oil production appears to have a largely negligible effect except in the case of service contracts, where it is positively associated with regime adoption.

Graphical illustrations of predicted probabilities underscore these findings. Greater exposure to concessions by means of international energy organizations appears to have a near-linear relationship to the probability of concession adoption among developing countries (the size of the confidence intervals renders the effects indeterminate within the North). A developing country lacking membership in any international energy organization that in 2013 joined the International Energy Forum would subsequently be almost 30 percent more likely to adopt the concession system within three years.[286] In contrast, the potential effect of concession emulation is at most half of that of learning among all country types, and the confidence intervals are sufficiently large that the presence of a concession-using role model may be indistinguishable from its absence. Likewise, the confidence intervals on the effects of oil rent and oil production suggest tremendous uncertainty over the consequences of any increases up to one standard

[286] The IEF is the largest international energy organization in terms of membership and would therefore be the most likely organization for a new player to enter. In 2013, the share of concessions in the IEF was approximately 48%.

deviation, or 25 percent of GDP. Graphical illustrations also underscore another difference between North and South: the probability of concession adoption is nearly 100 percent for virtually all values of the variables within the North, reflecting the fact that almost no OECD country has deviated from this model.

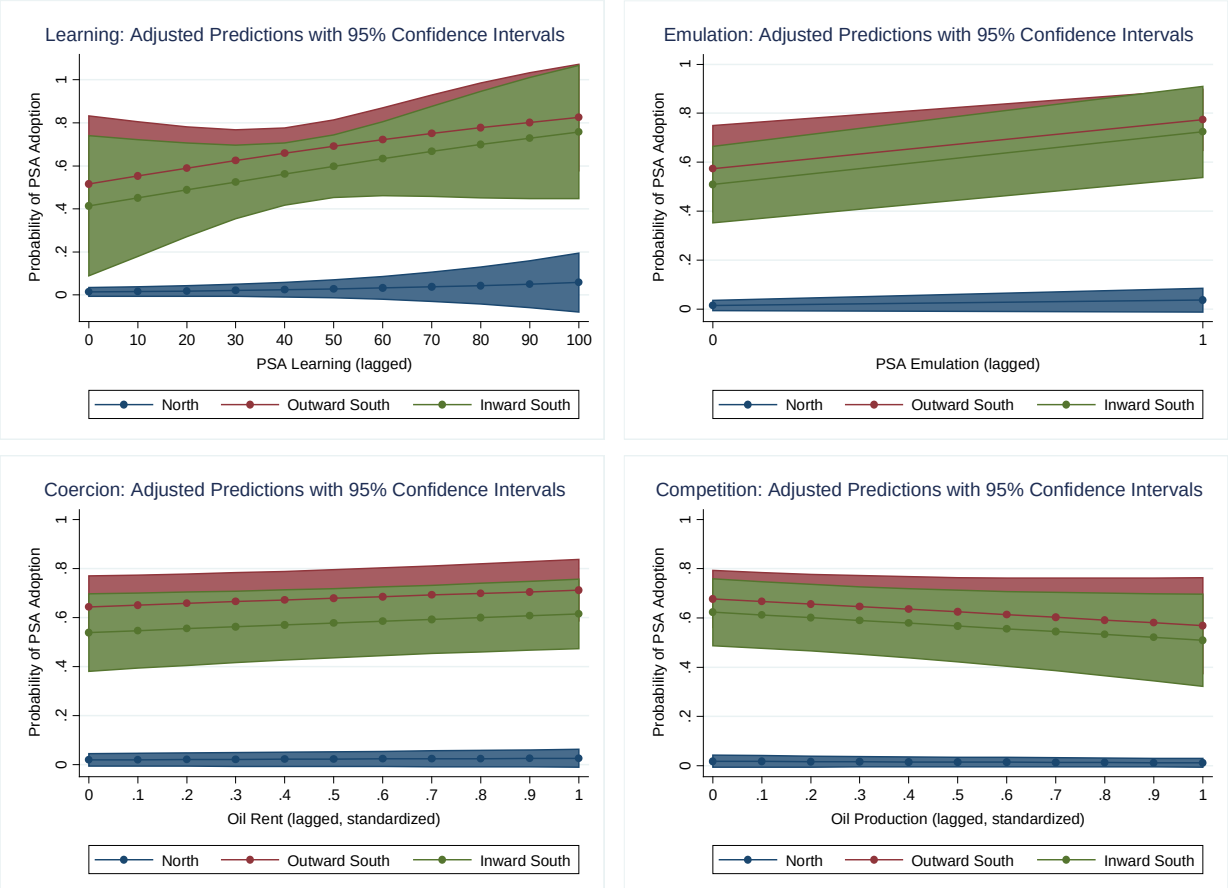
FIGURE 8. ADJUSTED PREDICTIONS AT MEAN VALUES, CONCESSIONS



Compared to concessions, the general patterns observed among developing countries in terms of PSA adoption appear broadly similar, with some differences in the size of the effect and confidence intervals. Here, the position of the North seems to be reversed, holding at near-zero levels for most values of each of the mechanisms. This indicates a negligible probability of PSA adoption, reflecting the extreme rarity of this regime among developed countries. The patterns

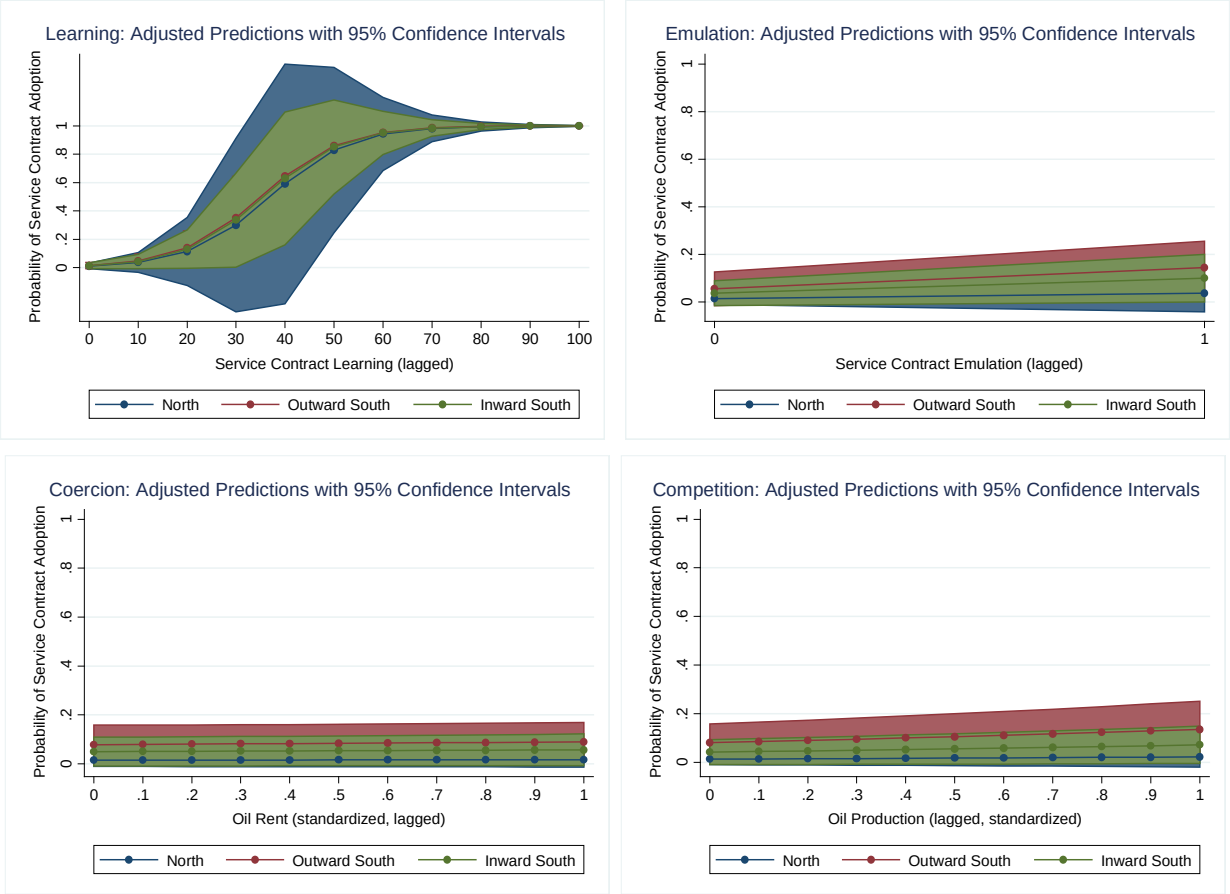
appear similar across the two types of Southern states, except that the probabilities of PSA adoption appear slightly elevated for the Outward South relative to the Inward South. For each of the mechanisms, the confidence intervals are substantial, making it difficult to estimate the size of the effect. However, the potential magnitude of learning and emulation far exceeds that of coercion and competition: between the two extremes of PSA exposure, the probability of PSA adoption appears to rise by more than 20 percent, with similar results for emulation. The relationship between oil rent and PSA adoption, as well as that of oil production and PSA adoption appears to be nearly flat (or negative in the latter case). In both cases, confidence intervals are large enough to make the effect difficult to differentiate from zero.

FIGURE 9. ADJUSTED PREDICTIONS AT MEAN VALUES, PSAS



The final category of petroleum regimes exhibits a slightly different pattern. Accounting for confidence intervals, the adjusted predictions depicted in Figure 10 suggest that only learning has a substantial effect on service contract adoption. Even disregarding confidence intervals, none of the other diffusion mechanisms is associated with an effect exceeding a 20 percent probability of service contract adoption for any country type. For learning, the effects appear to accrue much more rapidly than in either of the other two regimes, with average exposure of more than fifty percent being associated with a nearly 100 percent probability of service contract

FIGURE 10. ADJUSTED PREDICTIONS AT MEAN VALUES, SERVICE CONTRACTS



adoption, all other variables held to their means. However, the associated confidence intervals are large, particularly in the case of the North, where the estimates are effectively indeterminate. Moreover, while this effect appears substantial, exposure to service contracts is generally lower than exposure to other petroleum regimes. In fact, only OPEC during the 1980s approached 50 percent service contract exposure levels. Given that many countries are members of multiple organizations, service contract learning is generally even lower, with a mean value just below 0.1, reducing the actual substantive impact of learning.

Collectively, these findings enable us to judge the performance of the diffusion framework on two dimensions: its ability to correctly anticipate the direction of the effect, as well as the substantive significance of the effect.[287] While the former can be objectively determined – based on the value of the coefficients and the direction expressed in Figure 8 through Figure 10 – the question of substantive significance is inherently more subjective. The assessment is based on the graphical depictions of adjusted predicted probabilities, where a variable is considered substantively significant if the probability of regime adoption is changed by 20 percent over the values of the measure, putting aside the 95 percent confidence intervals. The hypotheses themselves are based on the theory developed in Chapter Two, section 6, in which the general theoretical framework is applied to oil regimes. This application results in Table 7, reproduced below, which outlines 16 scenarios in which country type and elite type affect the relative influence of each of the diffusion mechanisms. Here, K signifies competition, C is coercion, L is learning, and E denotes emulation.

[287] It would also be possible to judge the performance according to the statistical significance of the effect, but this would be a fairly meaningless measure if not accompanied by a substantive effect.

TABLE 7. MECHANISMS OF DIFFUSION FOR PETROLEUM REGIMES

		Concession (Outward North)	Service Contract (Inward South)	PSA (Outward South)
Importer North	Inward	**K**	-	-
	Outward	**K L E**	-	**L**
South	Inward	-	**E**	**K E**
	Outward	**C K L E**	**K L E**	**K L E**

After collapsing the North into a single country type, Table 7 can be expanded into 36 hypotheses that indicate whether or not a mechanism will have a positive (+), negative (–), or insignificant (○) effect on the adoption of each of the petroleum regimes. In cases of anticipated insignificance, there is no expectation about the direction of the effect. Table 8 presents all of the hypotheses and summarizes the empirical results. Where the results confirm expectations, the cell is shaded in green. Disconfirming results are shaded in red. Where no specific hypotheses exist, the findings remain unshaded.

TABLE 8. ASSESSMENT OF DIFFUSION FRAMEWORK HYPOTHESES, GENERAL MODEL

Mechanism	Country Type	Regime Type	Hypotheses	Findings	
				Direction	Substantive Effect
Learning	North	Concession	+	+	Yes
		PSA	+	+	No
		Service	○	+	Yes
	OS	Concession	+	+	Yes
		PSA	+	+	Yes
		Service	+	+	Yes
	IS	Concession	○	+	Yes
		PSA	○	+	Yes

Mechanism	Country Type	Regime Type	Hypotheses	Findings	
				Direction	Substantive Effect
		Service	○	+	Yes
Emulation	North	Concession	+	+	No
		PSA	○	+	No
		Service	○	+	No
	OS	Concession	+	+	No
		PSA	+	+	Yes
		Service	+	+	No
	IS	Concession	○	+	No
		PSA	+	+	Yes
		Service	+	+	No
Coercion (*Oil Rent*)	North	Concession	○	−	No
		PSA	○	+	No
		Service	○	+	No
	OS	Concession	−	−	No
		PSA	○	+	No
		Service	○	+	No
	IS	Concession	○	−	No
		PSA	○	+	No
		Service	○	+	No
Competition *(Production)*	North	Concession	+	+	No
		PSA	○	−	No
		Service	○	+	No
	OS	Concession	+	+	No
		PSA	+	−	No
		Service	+	+	No
	IS	Concession	○	+	No
		PSA	+	−	No
		Service	○	+	No

The framework appears to perform well overall. The *direction of the effect* is as anticipated in sixteen out of seventeen cases, with only one negative finding. Furthermore, in the

failed case – which concerns the effect of competition on PSA adoption – the direction of the effect is potentially ambiguous given the confidence intervals involved. The theory performs slightly less well when it comes to *substantive significance*, where the results are as anticipated in twenty-one out of thirty-six cases, or slightly under sixty percent. In part, this may reflect a general weakness in the operationalization of the coercion and competition variables, with the latter performing particularly poorly.[288] Additionally, five of the failures are associated with service contracts, which, owing to their rarity, are difficult to accurately estimate. Moreover, as noted in Chapter 2, the theoretical framework seeks to isolate the mechanisms that are most likely to play a role, without ruling out the possibility that other mechanisms may have some influence. Thus, the existence of significant variables in addition to what was hypothesized is not entirely unexpected. Taking both measures of theory performance together, the results offer 30 partly and fully confirmed hypotheses out of a total of 36.[289] More generally, the results suggest that learning and emulation play a particularly prominent role in the diffusion of petroleum laws to an extent that is even greater than anticipated. This result appears to carry across all country types and elite types.

4.2 Incorporating Interaction Terms

While the first model offers one assessment of the significance and influence of the four mechanisms of diffusion, a more faithful reflection of the theory incorporates interaction terms.

[288] One possibility is that oil production is not linearly related to competition. Specifically, it is possible that there are significant qualitative differences between non-producers, mid-level producers, and large producers that are not captures in the measure used. The first and latter of these groups may be far less sensitive to competition than the middle group.

[289] A hypothesis is "partly or fully confirmed" if either one or both of the direction and substantive effect outcomes is as anticipated.

These serve to reflect the ways in which the mechanisms of diffusion respond to variations in international power structures, peer groups, and elite perspectives. This section assesses the performance of the framework's hypotheses under such a modified model, which employs dummy variables for core states, outward-oriented periphery states, and inward-oriented periphery states, interacting each with each of the diffusion measures, respectively. In all other respects, the model remains the same.[290] Table 9 presents the logit model results.[291] There are three important notes to be made about this model. First, the use of interaction terms produces several highly noticeable instances of sparse data bias when the North is included in the model. This is because both PSAs and service contracts are extremely rare and are driven by only a handful of cases. In order to correct for this bias, the table reported below drops all Northern countries from the analysis.[292] Second, within this abbreviated model there is a high level of correlation (65 percent) between PSA learning and PSA emulation (in contrast, the correlation is only 29 percent for concessions and 11 percent for service contracts). This has the effect of reducing the statistical significance of one of the two variables.[293] Third, it is important to note

[290] Variations excluding oil price and GDP per capita were tested, with little effect on the results.

[291] The model specification selected here reports only the interaction terms, and not the dummy variables themselves. An alternative specification would add dummy variables for country type as well as each of the independent variables without interactions. The results are substantively the same, but are interpreted slightly differently. In the model reported here, the coefficients represent the logit values for each of the mechanisms within the specified set of countries. In contrast, the results of the alternative specification represent the size of the coefficients on the mechanisms relative to the base category (in this case, North).

[292] For results for the full dataset, see the appendix.

[293] For results that use an alternative measure of emulation that does not have this unfortunate property, see the appendix.

TABLE 9. SOUTH-ONLY LOGIT MODEL OF PETROLEUM REGIME CHOICE, WITH INTERACTIONS

	Concession	PSA	Service Contract
Learning (*lagged*)			
Outward South	0.01	0.01	0.09**
	(0.02)	(0.02)	(0.04)
Inward South	0.03	0.01	0.12**
	(0.03)	(0.02)	(0.04)
Emulation (*lagged*)			
Outward South-Regional Regime Leader	0.47	1.17*	1.26**
	(0.50)	(0.64)	(0.71)
Inward South-No Regional Regime Leader	-1.00	0.33	-0.91
	(1.20)	(1.10)	(1.47)
Inward South- Regional Regime Leader	-0.03	1.20	-0.52
	(1.33)	(1.06)	(1.45)
Oil Rent *(standardized, lagged)*			
Outward South	-0.34	0.50*	-0.05
	(0.24)	(0.30)	(0.27)
Inward South	-0.72**	0.24	0.32
	(0.25)	(0.29)	(0.29)
Oil Production *(standardized, lagged)*			
Outward South	-0.28	-0.97**	0.88*
	(0.36)	(0.42)	(0.48)
Inward South	0.21	-0.33	0.46**
	(0.18)	(0.28)	(0.21)
Oil Price (*lagged*)	-0.04	-0.01	0.01
	(0.03)	(0.03)	(0.01)
Political Constraints *(standardized)*	0.25	-1.28	2.69**
	(0.82)	(0.88)	(0.67)
GDP per Capita *(standardized, lagged, log)*	0.65**	-0.44	0.04
	(0.31)	(0.37)	(0.58)
Years (*omitted)*			
Constant	0.26	0.50	-4.72**
	(2.66)	(0.90)	(1.13)
Pseudo R^2	0.1028	0.1624	0.3171
Log Pseudolikelihood	-1220	-1177	-596

	Concession	PSA	Service Contract
Observations	2097	2097	2087
Clusters	95	95	95

Notes: * denotes p < 0.10, ** denotes p < 0.05. Standard Errors are reported in parentheses.

that the interpretation of interaction terms differs from that of linear models, and therefore both the sign and significance of the effect may not be fully reflected in the tabulated results.[294] For a more complete picture, Figure 11 through Figure 14 depict the interaction terms across a range of values. Nevertheless, a preliminary assessment based on Table 9 offers several insights.

First, the results appear to support the contention that mechanisms of diffusion are sensitive to elite type, justifying the use of the two-level theory developed in Chapter Two. Whereas the results from section 4.1 suggest that Outward South and Inward South are quite similar, the use of interaction terms and the omission of the North sharpen the differences between the two types of elites within the South. Notably, except for learning and oil production in the case of the service contract, the statistical significance of each of the mechanisms varies across inward and outward elites. For example, when it comes to the decision on whether or not to adopt a PSA, outward-oriented elites appear far more responsive to a high share of oil in the economy and rising oil production. In the former case, large oil rents increase the probability of PSA adoption, signaling elite preference for a more restrictive system relative to the concession (while still avoiding the service contract). This choice could be a response to popular demands

[294] As Ai and Norton (2003) argue, there are several problems with the interpretation of the results of an interaction term in logit. Among these are that statistical significance of the interaction effect cannot be easily calculated, interaction effects "may have different signs for different values of covariates" (124). As a result, interpretation demands some additional analysis. In this case, we follow the advice of Greene by supplementing the tabular representations with graphical analysis of the interaction (Greene 2010).

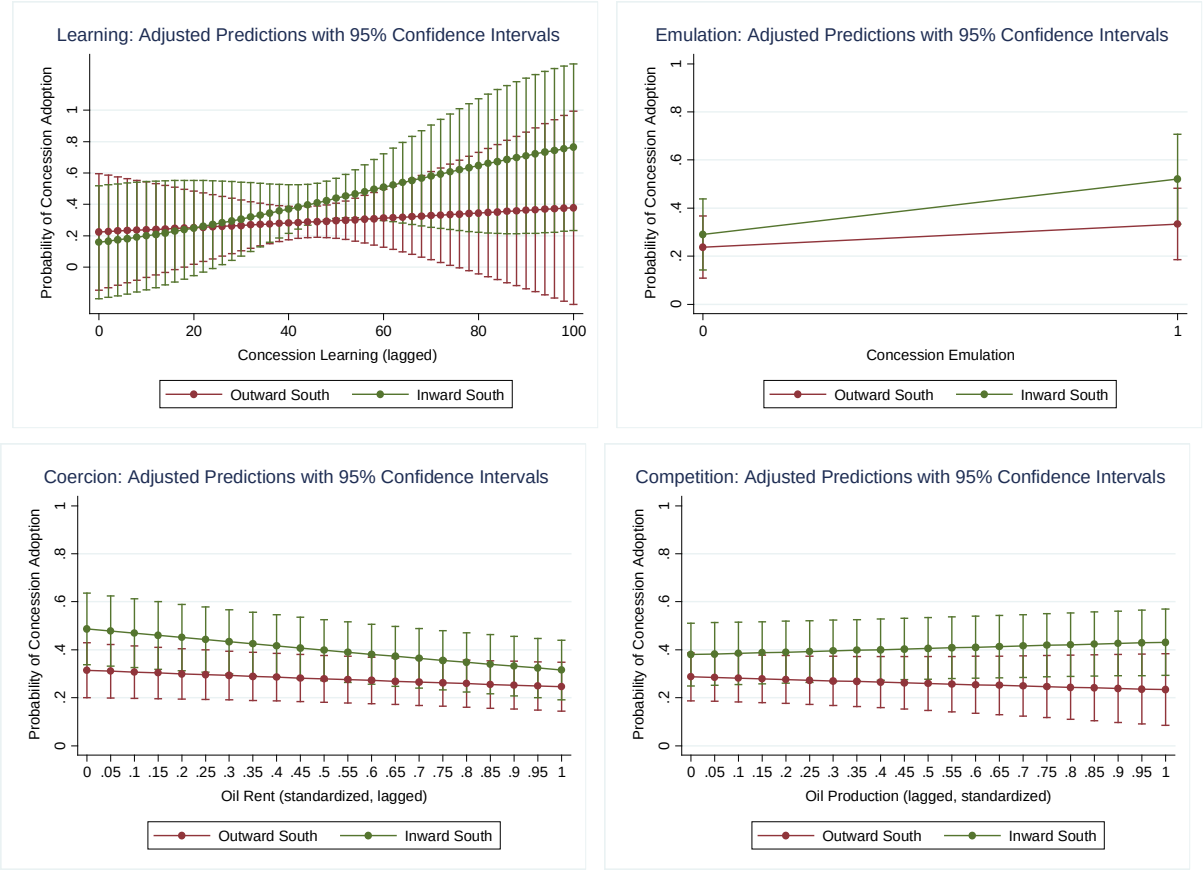
for more visible sovereignty and greater returns on oil production. Conversely, rising oil production appears to reduce the likelihood of PSA adoption in outward-oriented states. This could signal a desire to attract continued investment by way of the concession system, or a shift to the service contract – two possibilities that are explored in section 4.3.

Not only are some variables only statistically significant in some domestic environments, but the direction of the effect seems to vary, as well. In the case of the service contract, for example, outward-oriented elites appear to respond positively to the presence of a regional leader using the service contract, whereas inward-oriented leaders respond negatively (although the results for the latter are statistically not differentiable from zero). This difference may be attributable to the sources of elite legitimacy: outward-oriented elites may benefit from adopting policies that look like those of regional success stories, whereas inward-oriented elites may find advantage in differentiating themselves from the rest of the region or the world in general.

Generally speaking, variations in the direction and significance of effects supports the theoretical contention that there are domestic and international factors that condition the importance of different diffusion mechanisms. In order to assess whether those variations follow the anticipated patterns, it is necessary to turn to graphical depictions of the mechanisms across a variety of values of the independent variables. Figure 11 to Figure 13 are each made up of four charts which depict adjusted predictions for petroleum regime adoption with 95% confidence intervals. Results are broken down by elite type.[295] The results broadly confirm Table 9's findings while also facilitating interpretation of substantive effects.

[295] Contrast charts are presented in the appendix, comparing adjacent values to determine whether or not the values are equal.

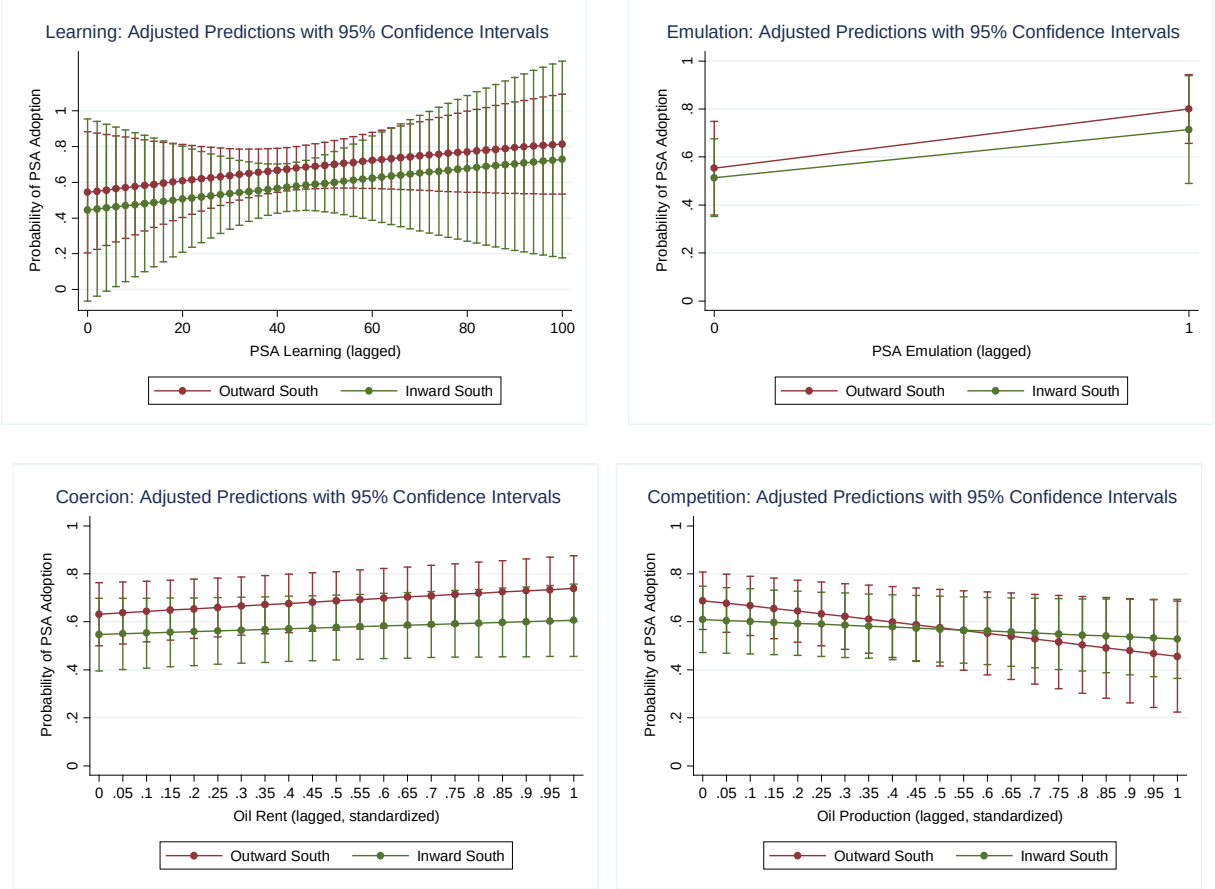
FIGURE 11. ADJUSTED PREDICTIONS FOR CONCESSION ADOPTION



In all four cases, the confidence intervals are substantial enough to make it difficult to differentiate the effect size from zero, especially among outward-oriented elites. The lack of responsiveness to these diffusion mechanisms may be attributed to the fact that nearly all countries reach independence with a concession regime in place. Outward-oriented countries may simply never shift away from concessions and will therefore exhibit little variation in response to diffusion mechanisms. The relatively large potential effect size of learning and emulation in the case of inward-oriented elites, on the other hand, may suggest that these types of countries were more likely to switch away from concessions in the first place and may be returning back to their original regimes in subsequent years. Thus, an inward-oriented developing country at the mean on all values with an average concession exposure of 20 percent

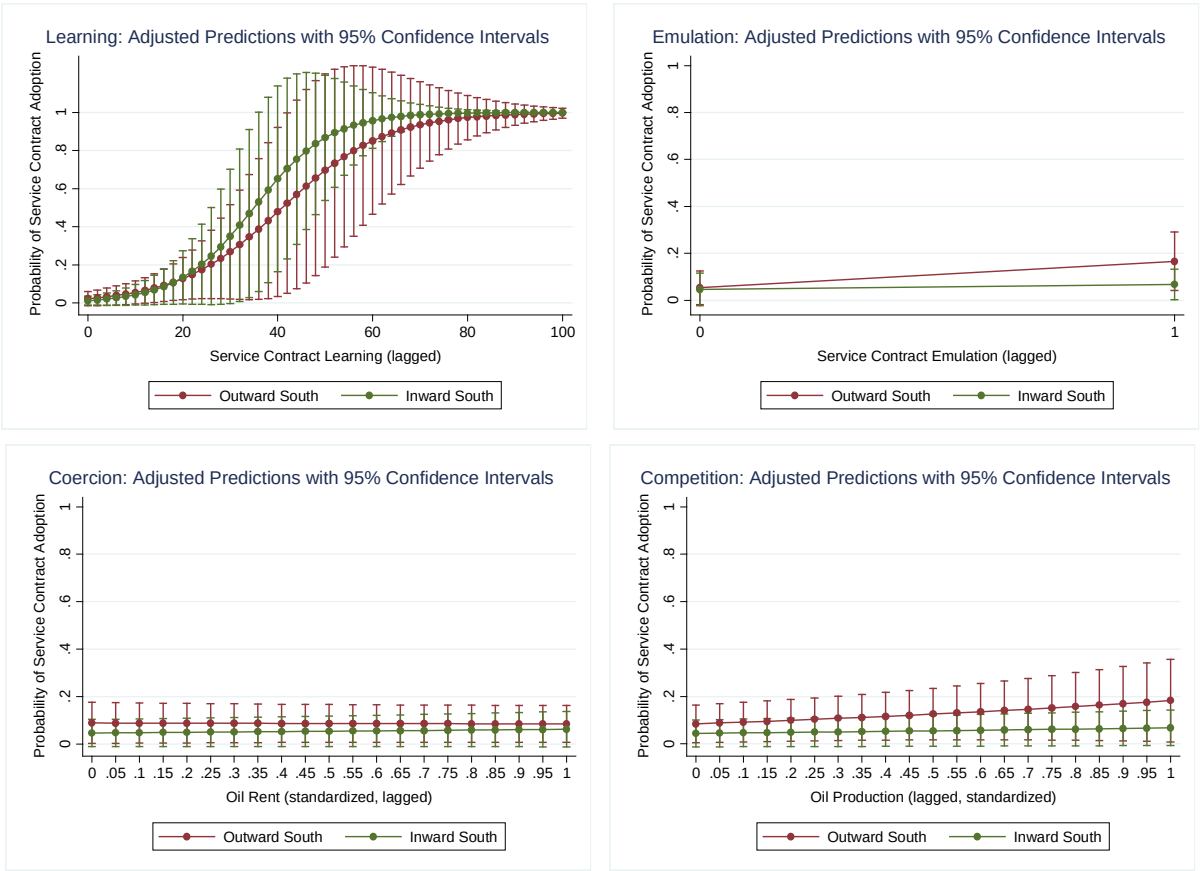
– roughly equal to APPA's concession share in the mid-1990s – whose learning score rose by 20 would experience a corresponding increase in the probability of adopting a concession of nearly 20 percent. Such an increase in exposure might come from joining organizations that provide new information or interpretations of their experiences with different oil laws. Alternatively, it might come from changes in regime type among existing members, whose experiences can update reformers' expectations about the likelihood that concessions will provide tangible benefits or by demonstrating that regulatory reform can be politically palatable. The total size of the effect of emulation is slightly lower, falling just below a 20 percent increase in the probability of concession adoption.

FIGURE 12. ADJUSTED PREDICTIONS FOR PSA ADOPTION



The differences between outward- and inward-oriented periphery states appear slightly less pronounced in the case of PSA adoptions, shown in Figure 12. In contrast to the concessions case, however, outward-oriented Southern states have higher baseline probabilities of regime adoption than inward-oriented ones. Compared with the concessions case, the effect of learning appears lower when it comes to PSAs, with the probability of PSA adoption rising slightly less than 10 percent for every additional 20 percent of PSA exposure. Table 9 suggests that three of the predictors of petroleum regime choice (emulation, oil rent, and oil production) are statistically significant for at least one elite type. Graphical illustrations suggest that in all three cases the total potential effect is slightly larger for outward-oriented elites and remains close to 20 percent in each case.

FIGURE 13. ADJUSTED PREDICTIONS FOR SERVICE CONTRACT ADOPTION



In terms of service contract learning, Figure 13 suggests that the effects are potentially quite substantial, but tend to accrue mostly after exposure levels exceed 20 percent. This could represent a high political barrier to nationalization, but it could also reflect the relative rarity of cases in which countries do reach high levels of service contract exposure. Even within OPEC, the share of service contracts used by its members has never exceeded fifty percent, and membership in multiple organizations would water down this effect even more. In effect, few countries are likely to receive much detailed information about service contracts from governments that actually apply this regime in practice. Judging by the results, even when exposed to such information, outward-oriented elites are less likely to follow the same course. In contrast, developing countries with outward-oriented elites seem slightly more receptive to other mechanisms of service contract diffusion relative to inward-oriented elites, although the overall size of this effect remains very low across all cases.

Collectively, Figure 11 through Figure 13 support the argument that elite type has a significant effect on the strength and direction of the mechanisms of diffusion. They also allow the same metric of direction and substantive effect to be applied to the hypotheses generated from Table 8. The results, reported in Table 10, suggest that the *direction of effect* was correctly anticipated in nine out of thirteen cases. In terms of *substantive significance* (and setting aside the question of statistical significance), eleven out of twenty-four cases conformed with expectations. The rate of combined partial and complete successes is nearly two-thirds. Failures to correctly anticipate the significance of the various diffusion mechanisms are concentrated among inward-oriented states, which account for seven out of the nine failures. This may be attributable to data sparseness: just 25 percent of all countries in the South-only dataset are classified as inward-oriented.

TABLE 10. ASSESSMENT OF DIFFUSION FRAMEWORK HYPOTHESES, INTERACTION TERMS

Mechanism	Country Type	Regime Type	Hypotheses	Findings	
				Direction	Substantive Effect
Learning	OS	Concession	+	+	No
		PSA	+	+	Yes
		Service	+	+	Yes
	IS	Concession	○	+	Yes
		PSA	○	+	Yes
		Service	○	+	Yes
Emulation	OS	Concession	+	+	No
		PSA	+	+	Yes
		Service	+	+	No
	IS	Concession	○	–	Yes
		PSA	+	+	Yes
		Service	+	–	No
Coercion (*Oil Rent*)	OS	Concession	–	–	No
		PSA	○	+	No
		Service	○	–	No
	IS	Concession	○	+	Yes
		PSA	○	–	No
		Service	○	+	No
Competition *(Production)*	OS	Concession	+	–	No
		PSA	+	–	Yes
		Service	+	+	No
	IS	Concession	○	+	No
		PSA	+	–	No
		Service	○	+	No

Overall, the interactions model presented in this section confirms several of the insights from the preceding model. First, country type – whether classified according to North/South (as in the previous model) or Inward-/Outward-oriented – appears to have a pronounced effect on the ways in which diffusion takes place. Second, in accordance with the theory developed in the preceding chapter, to the extent that diffusion plays a significant role, learning and emulation

tend to be leading drivers while both coercion and competition are far less prominent than conventional wisdom might suggest.

4.3 Multinomial Logit Model

The two approaches adopted previously have evaluated each of the petroleum regimes as a discrete dependent variable, making direct comparison of the resulting coefficients impossible. Although the results are sufficient to test many of the hypotheses of the theoretical model, understanding the choice between petroleum regimes requires a different approach. A multinomial logit replaces the binary dependent variables from the previous models with an unordered variable ranging from 1 to 4 to denote all possible petroleum regime choices, including the mixed category, which has not been included in the analysis so far. Beyond introducing a new regime variant, this approach offers a better perspective on which petroleum regime is benefiting at the expense of the others and why. Specifically, by using concessions as a baseline category (reflecting its status as the "default" petroleum regime for much of history), the results show the factors that influence the choice of regime relative to concessions.

In spite of its advantages, this model has some important limitations. First, this multinomial model is unable to estimate results when using country fixed effects. As a result, Mozambique in 1974 is considered just as independent from Mozambique in 1973 as Nigeria in 1973. The consequence of this modeling difference is that variables are more likely to appear as statistically significant relative to the models in 4.1 or 4.2. The model is also unable to converge when interaction terms are included. It therefore takes the same form as the initial logit model outlined in section 4.1. Bearing these limitations in mind, Table 11 presents the results of a multinomial logit model that uses concessions as the base outcome.

TABLE 11. MULTINOMIAL LOGIT MODEL, BASE OUTCOME = CONCESSION

	PSA	Service Contract	Mixed Regime
Outward South	2.95**	3.84**	0.46
	(0.46)	(0.61)	(0.49)
Inward South	2.83**	3.33**	-0.34
	(0.42)	(0.52)	(0.23)
Learning (*lagged*)			
Concession	-0.11**	-0.09**	-0.09**
	(0.02)	(0.03)	(0.04)
PSA	-0.04**	-0.02	-0.05**
	(0.01)	(0.01)	(0.02)
Service	-0.07**	-0.16**	0.05
	(0.02)	(0.03)	(0.03)
Emulation (*lagged*)			
Concession	-1.54**	-2.01**	-0.43
	(0.24)	(0.28)	(0.39)
PSA	0.63**	0.66**	-0.49
	(0.20)	(0.28)	(0.33)
Service	-0.34	-0.60	0.84**
	(0.29)	(0.38)	(0.41)
Oil Rent *(standardized, lagged)*	1.01**	0.88**	0.96**
	(0.10)	(0.12)	(0.12)
Oil Production *(standardized, lagged)*	-0.56	0.19**	0.50**
	(0.11)	(0.08)	(0.08)
Oil Price (*lagged*)	-0.02	0.35	0.34
	(0.03)	(38.86)	(28.46)
Political Constraints *(standardized)*	-0.72**	0.68	1.86**
	(0.33)	(0.45)	(0.48)
GDP per Capita *(standardized, lagged, log)*	-1.01**	-0.39**	-0.91**
	(0.13)	(0.19)	(0.18)
Years (*omitted)*			
Constant	8.22**	-13.53	-11.98
	(2.72)	(1923.77)	(1408.76)
Pseudo R^2		0.3727	
Log Pseudolikelihood		-2111	
Observations		2840	

As noted above, the absence of country fixed effects means that the majority of diffusion mechanisms appear to be statistically significant for every type of petroleum regime. Developing countries appear to be more likely to adopt non-concession regimes, with the effect being slightly larger for outward-oriented Southern states. Given the fact that both alternative regimes were designed to respond to the needs and preferences of the South, this result is unsurprising. Both types of Southern states are also more likely to adopt the service contract than the PSA based on country type alone. Also in line with expectations are the findings regarding emulation: If the leading producer in the region uses a concession, countries seem to be less likely – relative to concessions – to switch to a non-concessions regime. Similarly, if the leading producer uses a PSA, PSA and service contracts appear to become more popular relative to concessions, to a similar degree. Service contract leaders do not appear to inspire direct imitation, instead supporting the adoption of mixed regimes in their regions. Thus, it appears that changes in regional leaders' petroleum regime are likely to attract enough attention and appear sufficiently attractive as to induce reform elsewhere in the region – whether that means adopting the same system or another. As anticipated, countries with a large share of oil rent as a percentage of GDP appear to be more likely to adopt a non-concession than a concession regime, with effect size being similar across all regime types. This may be because oil-dependent countries have far more ability to resist corporate or home government influence and also have a strong interest in ensuring control over a strategic sector.[296]

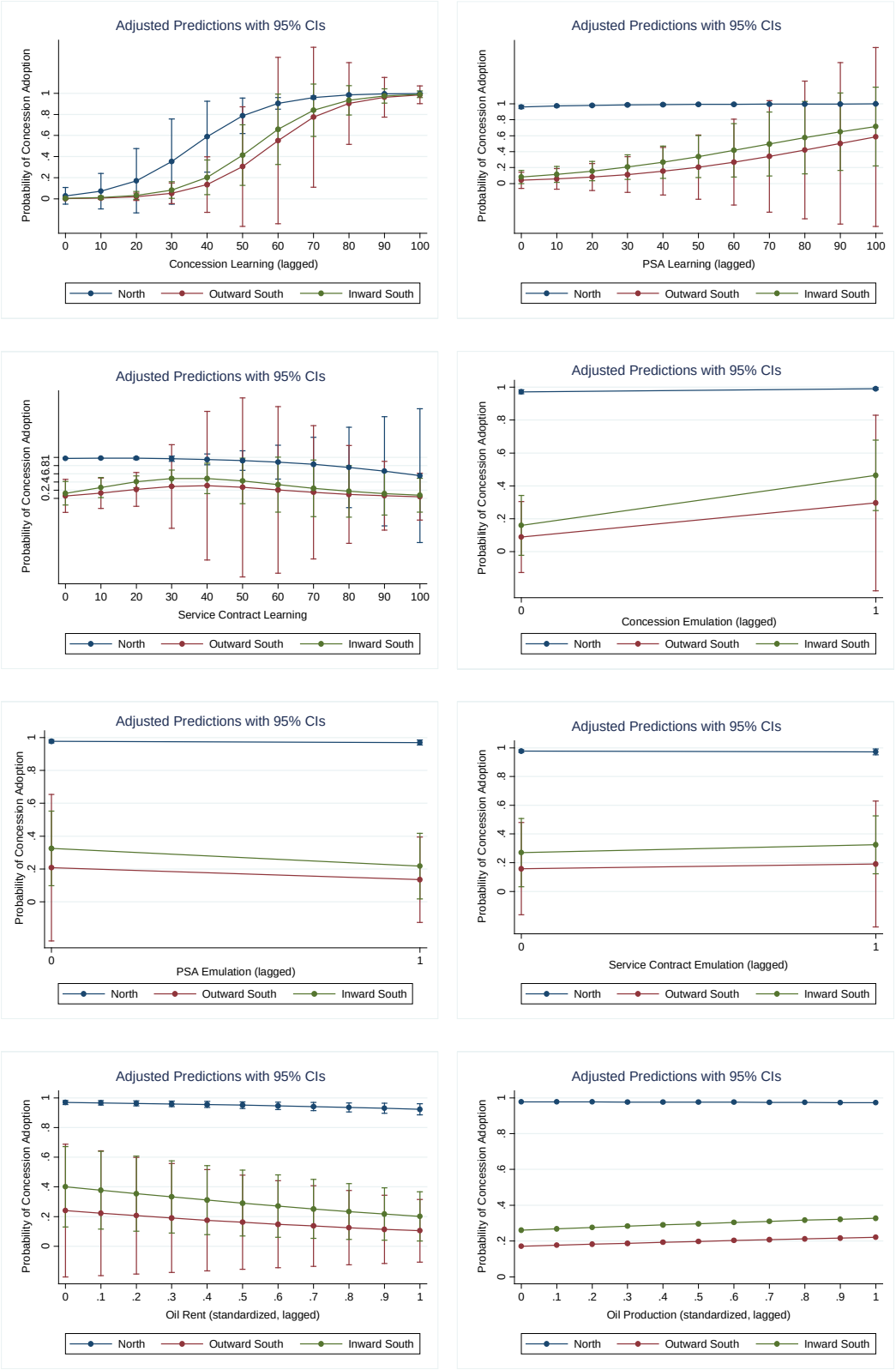
[296] There is some possibility of reverse causality in this case. Countries with oil monopolies under the service contract regime may be more likely to become petro-states.

The results for learning and oil production, on the other hand, do not perfectly conform to expectations. Large oil producers appear to prefer service contracts and mixed regimes to concessions. The size of this effect is particularly pronounced in the latter case, being more than twice as large for mixed regimes as for service contracts. This is unsurprising for extremely large producers but also suggests that competitive pressures are insufficient to deter countries from seeking to capture a larger share of the proceeds or assert greater control over key industries. Surprisingly, the coefficient on learning is negative throughout: relative to concessions, exposure to information about any regime type (including concessions) through international institutions appears to reduce the likelihood of adopting any non-concession regime. This result contradicts all of the preceding models, but may be capturing exposure to information about the costs of changing petroleum regimes that leads countries to prefer maintaining the status quo.

In order to assess the relative size of these expected and unexpected results, it is necessary to examine the adjusted predictions for each of the regime types. Results strongly suggest that the best predictors of concession adoption are all three forms of learning. Confirming the surprising results from Table 11, the more a country is exposed to information about any of the petroleum regimes,[297] the more likely it seems to be to maintain the concession regime. Beyond the suggestion presented above, the reasons for this might be found in the magnitude of the concession learning effect: for all three types of countries, the estimated effect

[297] The slope on service contract learning reverses around the 40 percent mark, suggesting that greater exposure to other countries sharing experiences about service contracts eventually reduces the likelihood of maintaining concessions. However, only a handful of states ever approach that level of service contract learning, making the results largely indeterminate, as reflected in widening confidence intervals.

FIGURE 14. ADJUSTED PREDICTIONS FOR CONCESSION ADOPTION

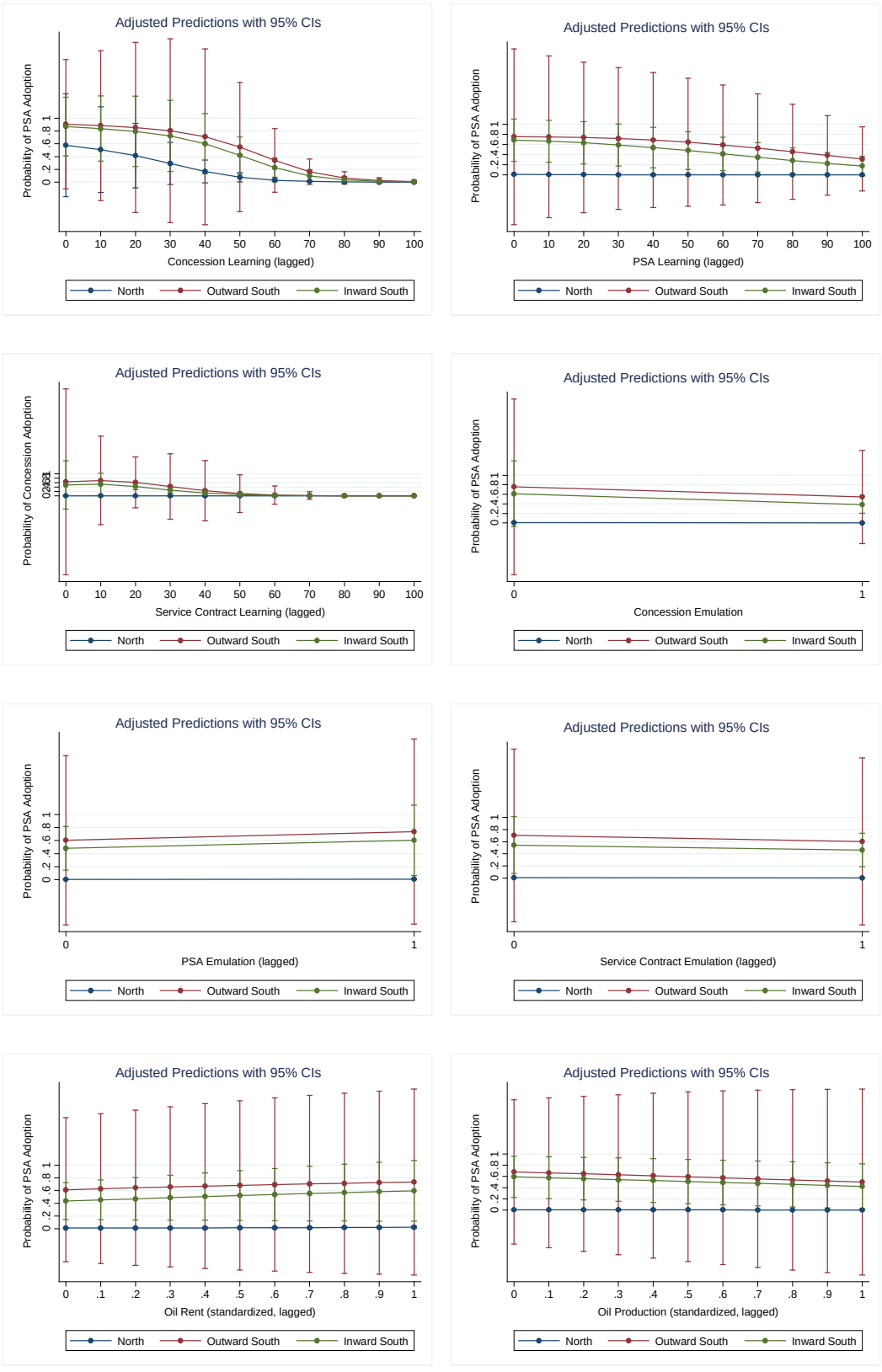


of concession learning dwarfs the other types of learning, resulting in an overall preference for concession maintenance.

None of the other mechanisms appear to have any measurable effect on Northern countries, suggesting that – in the North at least – concession exposure alone is sufficient to explain the predominance of this regime type. Developed countries, with an average concession learning score in excess of 75, may be aware of other regime types but are on average less exposed to first-hand information about the experiences of countries using other regimes. In the South, on the other hand, emulation and coercion appear to have some additional effect. A developing country located in a region with a leading producer that uses the concession system – as has been periodically the case in Latin America – is estimated to increase its likelihood of concession adoption by more than twenty percent. Conversely, a country whose oil rent as a percentage of GDP increases by one standard deviation, or roughly 11 percent, is estimated to be almost twenty percent less likely to adopt the concession system.

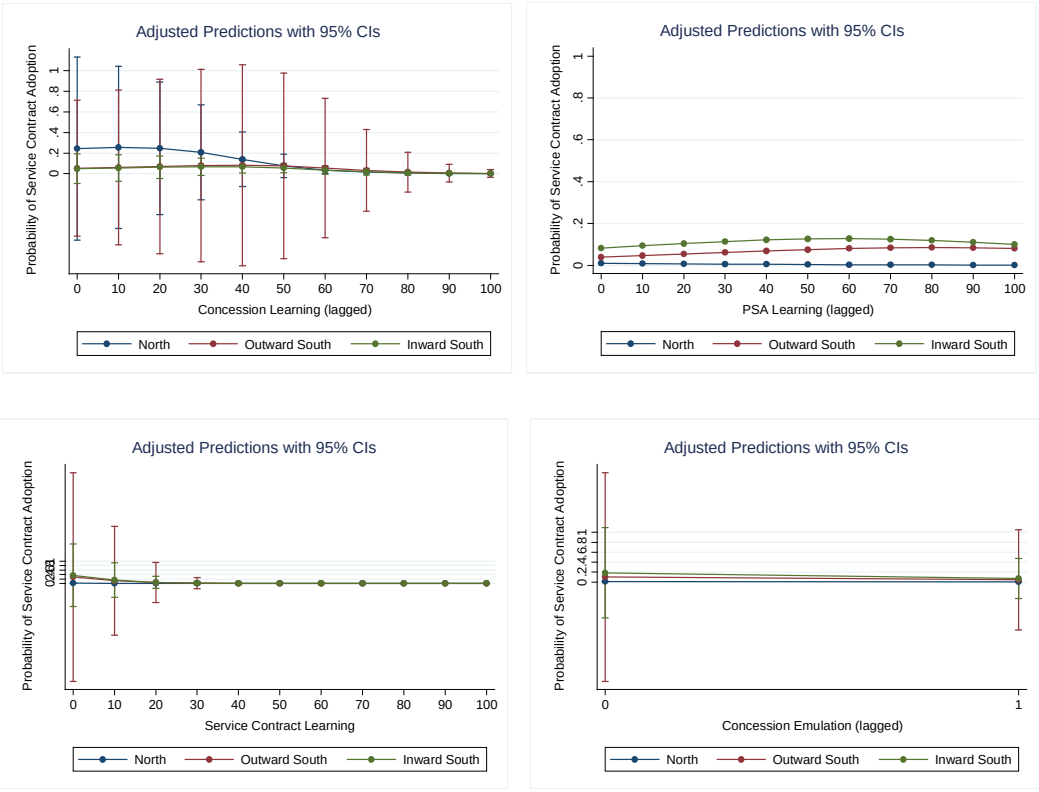
The substantive effects of the mechanisms driving PSA adoption are difficult to assess based on Figure 15, as the confidence intervals for all regime types are so large as to obscure the size of the effect. This issue might be attributable to the lack of controls for country fixed effects, as it does not arise in the preceding models, suggesting that there is enormous variation in the types of countries that gravitate towards the PSA model. Setting aside the question of confidence intervals, it would appear that, within the North, PSA adoption is only affected by concession learning, which reduces its attraction relative to concessions. Within the South, all forms of learning appear to have the largest effect on the adjusted prediction of PSA adoption, although the potential effect of the other mechanisms of diffusion approaches or even exceeds 20 percent.

FIGURE 15. ADJUSTED PREDICTIONS FOR PSA ADOPTION



As with PSAs, considering the propensities of service contract adoption as well as mixed regime adoption across country type gives rise to problems of estimation: Confidence intervals are either too large to differentiate the effects from zero, or the results are too singular to allow for estimation of confidence intervals. Learning appears to play some role in both cases, but the remaining effects appear largely invariant across the standardized ranges.

FIGURE 16. ADJUSTED PREDICTIONS FOR SERVICE CONTRACT ADOPTION



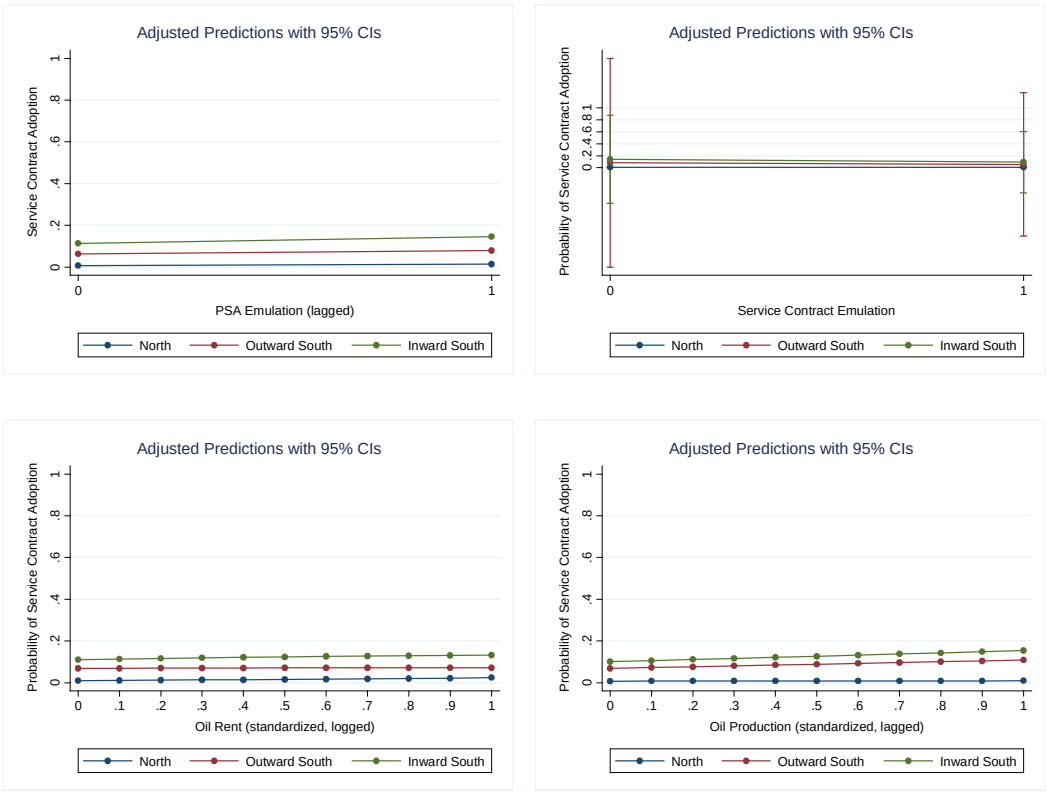
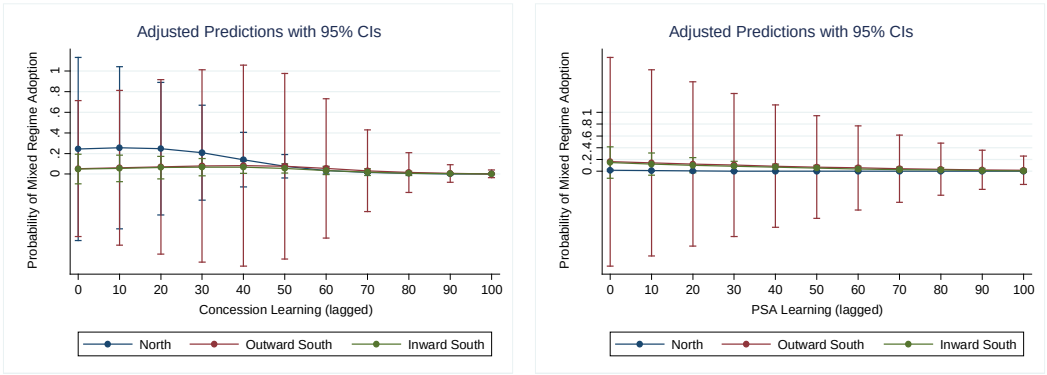
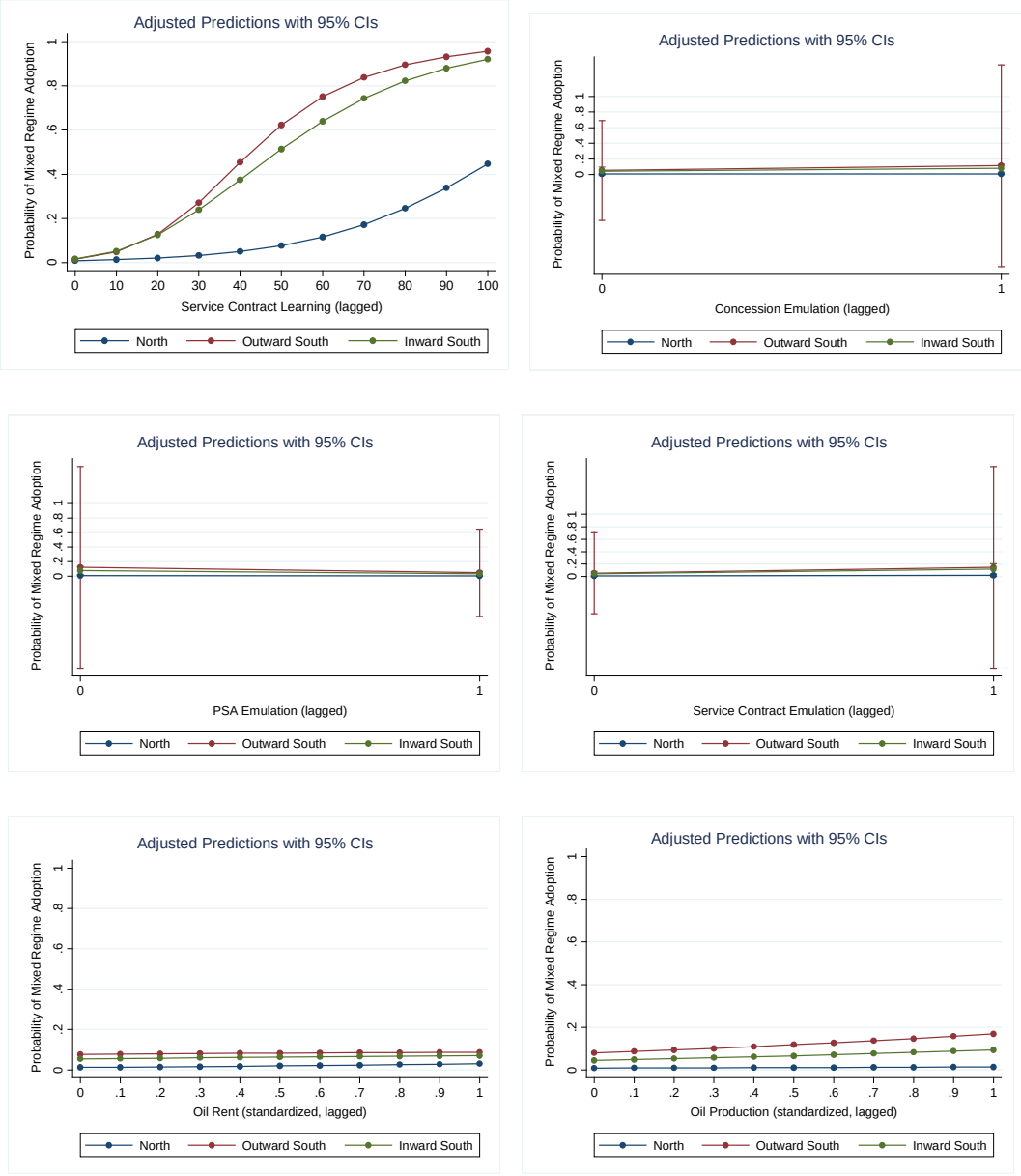


FIGURE 17. ADJUSTED PREDICTIONS FOR MIXED REGIME ADOPTION





In spite of its estimation challenges, the multinomial model performs similarly to both of the preceding model in terms of its conformity to theoretical expectations. In terms of directional hypotheses, the results are as anticipated in seven out of sixteen cases, with three indeterminate outcomes. In terms of substantive effect, the model confirms twenty-one out of thirty-six hypotheses, resulting in a nearly sixty percent success rate. The overall proportion of partially or completely confirmed hypotheses is over seventy percent.

TABLE 12. ASSESSMENT OF DIFFUSION FRAMEWORK HYPOTHESES, INTERACTION TERMS

Mechanism	Country Type	Regime Type	Hypotheses	Findings	
				Direction	Substantive Effect
Learning	North	Concession	+	+	Yes
		PSA	+	–	No
		Service	○	○	No
	OS	Concession	+	+	Yes
		PSA	+	–	Yes
		Service	+	–	Yes
	IS	Concession	○	+	Yes
		PSA	○	–	Yes
		Service	○	–	Yes
Emulation	North	Concession	+	+	No
		PSA	○	+	No
		Service	○	○	No
	OS	Concession	+	+	Yes
		PSA	+	+	No
		Service	+	○	No
	IS	Concession	○	+	Yes
		PSA	+	+	No
		Service	+	○	No
Coercion (*Oil Rent*)	North	Concession	○	–	No
		PSA	○	+	No
		Service	○	+	No
	OS	Concession	–	–	Yes
		PSA	○	+	No
		Service	○	+	No
	IS	Concession	○	–	Yes
		PSA	○	+	Yes
		Service	○	+	No
Competition *(Production)*	North	Concession	+	○	No
		PSA	○	○	No
		Service	○	○	No
	OS	Concession	+	+	No
		PSA	+	–	No
		Service	+	+	No

IS	Concession	○	+	No
	PSA	+	–	No
	Service	○	+	No

As in the preceding models, the disconfirming hypotheses largely concern the inward-oriented South, where the substantive effects are lower than anticipated. A lower threshold for substantive significance may have made some difference, although effects appear so negligible that such a modification would not have changed the outcome dramatically. As in the preceding model, the problem most likely lies in the relative scarcity of inward-oriented Southern states.

5 Conclusions

While the results of the quantitative models do not offer a perfect success rate, nearly two-thirds of hypotheses were at least partially confirmed in each of the models (although the performance of directional and substantive hypotheses on their own fared more poorly). Given the parsimonious nature of the theoretical framework and challenges with operationalization, these results are encouraging. The theoretical framework appears to be at least partially successful in offering important insights into the history of an oil law that is significant not only for host countries but for international investors and even consumers of oil. The three oil regimes discussed above fundamentally shape the investment climate and can affect the long-term supply of oil to world markets. Understanding why countries choose among these laws is therefore not only theoretically important as a way of comparing North-South (concession) and South-South (PSA and service contracts) diffusion, but also carries implications about foreign policy.

First, and as anticipated, the results appear to confirm that learning and emulation are central to explaining the diffusion of all regime types over all model types. Countries work to

understand each others' laws and the outcomes of their choices, particularly when the financial benefits are so large. Statistical results suggest that greater exposure to other countries with concessions or service contracts increases the probability of each regime's adoption in core and periphery, and among inward- and outward-oriented elites. Learning also is positively linked to PSA adoption in both types of periphery states. The explosive growth of PSAs in the 1990s may therefore have been a response to wider use of PSAs among members of international energy institutions. The importance of learning also suggests that advisors – whether private actors or working through international institutions – have the potential to play an enormous role in shaping legal outcomes around the world. Not only do they frequently have superior access to information about other countries, but they also filter and interpret other countries' experiences and demonstrate how to adapt them to new environments. The growing industry of donor agencies and non-profits therefore would be particularly well-advised to concentrate on educational efforts in order to affect positive change in the area of natural resource governance. Evidence similarly suggests that countries will often conform to the system that government and industry consensus deems most "appropriate" – in this case based on what regional leaders prefer.[298] Qualitative evidence suggests that developed countries do not see developing countries as relevant reference points, and quantitative evidence supports the finding that PSAs and service contracts do not penetrate the North.[299] Conversely, PSAs have been hailed as a solution to developing countries' political concerns, and have been embraced as an appropriate policy.

[298] For a detailed discussion on perceptions about what type of system is appropriate, see Chapter 4.

[299] This is consistent with advisor arguments that the OECD is unlikely to change from the concession, as it is satisfied with its current system (Oil & gas lawyer, December 3, 2014).

Second, I find that competition and especially coercion have very uncertain and seemingly low influence over petroleum regime choice across a range of countries. This means that offering incentives, threatening punishment, or emphasizing competitiveness may occasionally be effective strategies, but not reliably so. This largely conforms to the expectation that coercion has played little role in the diffusion of petroleum regimes, particularly not the PSA or service contract. The results regarding competition are mixed but tend towards substantive insignificance, which is surprising in terms of the theoretical framework, but, as noted, partly reflect limitations in the data.

CHAPTER 4: EMULATION AND LEARNING

"It follows that we all have an involuntary stake, and a pyramiding one, in the wisdom and effectiveness of the mineral development laws of every country of the world, irrespective of the country in which we may happen to live" – Northcutt Ely (1970)

1 Choosing Petroleum Regimes

Petroleum regimes are central to the interaction between investors and host governments, setting the basic framework for the mechanics and levels of taxation, work programs, local content, ownership of equipment, reserves and production, contract award mechanisms, investor protections, and a host of other issues. Petroleum regimes shape the viability of investments and determine the size and nature of benefits from oil development to the host country. As such, the choice and design of petroleum regimes is one of the most consequential decisions oil-producing states can make, and one where the outcomes may not be observable for years or even decades after their implementation. Recognizing this fact, host countries are increasingly taking the initiative in making informed choices, either by developing in-house expertise or, more commonly, by hiring external advisors to design their petroleum regimes. Gone are the days when oil companies could write their own laws.[300]

Although imposition has played a role in petroleum regime choice, as discussed in the following chapter, choice – driven by learning or emulation – is powerful in the diffusion of oil laws. In most cases, learning and emulation are mutually reinforcing, and have strongly supported the adoption of the Production Sharing Agreement (PSA) regime among developing

[300] Although such cases have always been extremely rare, there have been two particularly notorious instances – Venezuela and Saudi Arabia – in which the companies "were invited to draft their own petroleum legislation" (Moran 1973: 324).

countries over the past fifty years. While frequently complementary, when these mechanisms are at odds with each other in their policy recommendations – as occurs in one of the cases discussed in this chapter – domestic politics determines which is ultimately successful. In spite of their similarities, these mechanisms reflect different dynamics and may have diverging implications for their desirability for host countries.[301]

Beyond outlining the prevalence and importance of demand-based mechanisms of diffusion – particularly in developing and transitioning countries – this chapter also reveals the importance of advisors, consultants, and other experts in sharing and filtering information. In the oil industry, where outside of OPEC there has been surprisingly limited information exchange at the government-to-government level, experts, frequently based in developed countries, act as information transmitters and as mediators. Their perceptions of what is "appropriate" for a given country are perhaps just as important as that country's self-perception, determining how policy choices are presented and which countries are offered as potential role models. This mediating role muddies the distinction between learning and emulation, although the precise messaging used by advisors may still provide valuable clues about the transmission mechanism. As a result, it is necessary to pay attention not just to host governments but also the identities and processes of consultants when assessing the role of different demand-based mechanisms of diffusion.

[301] Shipan and Volden suggest that emulation (or imitation) may result in sub-optimal policy outcomes for many countries, as it fails to tailor policies to the needs and peculiarities of the importer. They argue that, "from a normative perspective, uncovering the various mechanisms of policy diffusion is crucial […] Policy adoption based on *learning* about effective policies elsewhere leads to good outcomes, whereas the negative externalities arising from *competition* can produce bad outcomes. *Imitating* other governments by simply copying their policies may result in inappropriate policy choices. And policy choices based on *coercion* by other governments are unlikely to be optimal." (2008: 840). Although this might suggest that imitation and learning might be distinguishable by their outcomes, this need not always be the case; countries might imitate a model that has been successful elsewhere and proves equally positive in its new environment.

This chapter is developed in five parts: In Part 2, I revisit the definitions of learning and emulation, as well as the hypotheses regarding how each is expected to operate in the dissemination of petroleum regimes. Part 3 elaborates on the ways in which the two mechanisms can be differentiated empirically over three periods beginning in 1960. Part 4 explores each period in greater depth by focusing on individual cases in which they supported different policy outcomes, thereby offering some insights into when and which mechanisms have been most powerful. Indonesia's adoption of the PSA, the Arab OPEC states' nationalizations, Russia's adoption and abandonment of the PSA and Mexico's diversified approach not only underscore the importance of learning and emulation in the diffusion process, but also reveal the role that domestic elites have played in determining which of the demand-based mechanisms ultimately dominated petroleum regime choice. In line with theoretical expectations, it appears that the choices of inward-oriented elites in the South appear motivated more by emulation than other factors, whereas outward-oriented elites in the South are more apt to follow the models dictated by learning. Part 5 concludes the chapter, drawing on the experience of the petroleum industry to offer some observations on the role of external advisors in the diffusion process.

2 Diffusion by Choice

Among the four mechanisms of diffusion, two are better understood as a choice, in the sense that pressure and desire for policy change originates within the importing country rather than in the policy exporter. Although exporters may actively promote these processes – whether through direct state-to-state interactions or indirectly through the intervention of non-state actors – the decisions of whether and from where to import policies is outside of their control. Because their difference lies in states' motivations for policy change – which cannot be directly observed

– learning and emulation are frequently difficult to distinguish in practice. There are, however, some conceptual and empirical areas of divergence between the two mechanisms that allow each of them to be identified, as discussed in the following section.

2.1 Definitions

As outlined in Chapter 2, learning occurs when an actor's beliefs change in response to new information, filtered through that actor's understanding of the world. Learning may be simple in the sense that it produces a change in strategy; or it may be complex, so fundamentally altering the actor's perception that it affects not just their actions but also their goals or understanding of cause and effect.[302] The likelihood that learning occurs varies by the perceived quality and source of information and may be enhanced under crisis conditions when the current course of action appears untenable.[303] Learning follows a "logic of consequences" – actors' behavior is driven by a calculation about the likely outcomes of particular actions – but learning does not necessarily produce the "best" or "right" outcomes.[304] Actors often function with incomplete information, biases, or worldviews that affect how new information is understood or processed. Nevertheless, learning approximates a cost-benefit calculation and "rational" decision-making, where actors seek to obtain the best possible outcome given the information available. That "best possible" outcome may change over time as actors' perceptions evolve and

[302] Nye (1987: 380).

[303] Stone, who states that "there is a convergence in the ideational literature that ideas matter more (or at least their impact is more observable) in circumstances of uncertainty where interests are unformed or some kind of crisis (was, environmental catastrophe, election swings) disrupts established policy patterns and provokes paradigmatic revision" (2001: 12). See also Brake and Katzenstein (2013: 747), Simmons et al. (2008: 31), and Haas (1992: 14-15).

[304] Nye (1987: 379).

new information becomes available, as well as through the efforts of non-state actors like epistemic communities or policy entrepreneurs.

In contrast, emulation is driven by a "logic of appropriateness," whereby the objective of behavior is to signal membership or identification with a particular set of peers, rather than to achieve a particular policy outcome.[305] As a result, emulation can result in behavior that is sub-optimal when evaluated under a material cost-benefit framework, with rewards for emulation being primarily normative, for example domestic and international legitimacy or enhanced prestige.[306] Peers or models for emulation are socially constructed around common identities (either actual or aspirational), with or without their active participation. Non-state actors participate in emulation by identifying gaps between current policies and those that would be more "appropriate" and by proposing models for emulation. Because emulation is prestige-seeking, it tends to be strengthened in the presence of power asymmetries, though it can occur within communities without significant imbalances of power.[307] Unlike learning, emulation also tends to result in wholesale, unreflective adoption, and typically will not prompt behavioral change in the country being emulated.

Thus, the key conceptual differences between emulation and learning are threefold, encompassing differences in their underlying logics, sensitivity to power relationships, and propensity towards recursivity. Learning is consequence-driven, centered on material factors, is

[305] Brake and Katzenstein (2013: 746).

[306] Finnemore and Sikkink (1998: 903).

[307] Examples of such groups might include the European Union.

largely independent of power relationships,[308] and can inform later decisions in both sending and receiving countries. Emulation, on the other hand, is motivated by perceptions about appropriateness and normative concerns. It is strengthened under conditions of power asymmetry and is largely unidirectional: a powerful country serves as a sender and a weaker one as receiver, and the original sender is relatively unlikely to make subsequent policy decisions based on the receiving country's choices.

2.2 A Note on Methodology

The remainder of this chapter evaluates the evidence in favor of learning and emulation in petroleum regime diffusion using four types of qualitative data. First, it relies on archival evidence that represents State Department analysis of petroleum-related events from the 1960s to the 1980s. This is drawn from documents housed at the U.S. National Archives located in College Park, MD, which are organized around subject matter and geography. The documents that inform this analysis are drawn primarily from files related to Indonesia, OPEC, Malaysia, and Algeria, which are among the first countries and groups to establish the PSA or to fully nationalize their industries, both of which represent rejections of the concession system.[309] Second, it draws on the electronic archives of the industry journal, *Oil & Gas Journal*, dating from 1980 to the present. Documents were initially screened based on their use of the terms "PSA", "PSC," "Production Sharing Agreement," and "Production Sharing Contract," meaning that discussion of service contracts and reversions to concessions may be underrepresented. In

[308] Learning is likely to be enhanced under conditions of power asymmetry, largely because countries deemed to be most similar or relevant are likely to be in a similar international power position.

[309] Earlier cases of nationalization exist prior to this period, but were qualitatively different in that they were isolated events and also occurred without the existence of a third policy option that still permitted private investment.

part, this is because service contract-only cases are extremely rare and date back to the OPEC and Mexican nationalizations that occurred prior to the period under analysis or are captured within the State Department documents. Third, this chapter draws heavily on anonymous interviews with more than forty industry experts, including lawyers, economists, and engineers with experience in government, publicly-traded oil companies, state-owned oil companies, service companies, independent consultancies, law firms, and non-governmental organizations. Although much of the discussion focuses on contemporary issues and trends, the majority of interview participants have over thirty years of experience in the industry and their views therefore draw on a broad range of the commodity and investment cycle. Finally, the chapter also relies on secondary evidence in the form of scholarly publications as well as studies by energy-focused think tanks, consultancies, and law firms, including several documents prepared by consultants for host governments undertaking energy policy reform.

This evidence provides a wide range of perspectives on policy change in the oil industry, covering all regions of the globe over fifty years. It thereby provides a strong foundation for process tracing, which uses multiple types of evidence to progressively confirm or disconfirm hypotheses about the importance of learning and emulation over time. However, in part because of the time frame and geographical scope of this research, it is difficult, if not impossible, to draw any definitive conclusions about the motivations of every country, especially when it comes to domestic policy preferences. This analysis represents a survey of broad patterns within the industry, with specific case studies largely left to future research. Those cases that are discussed in Part 4 are not randomly selected, but are ones that are repeatedly pointed to as major examples or models in documents and interviews. They are influential cases that have shaped understandings about the costs, benefits, and appropriateness of different petroleum regimes.

Finally, it should be noted that the perspective of host countries and actors outside of the United States are underrepresented in this research. This fact may be justified by the dominance of U.S.-based or –educated experts not just in the private sector but in public service around the world, but could result in some distortions of the findings.

3 Distinguishing between Learning and Emulation in the Oil Industry

Although emulation and learning are distinguishable in terms of power relationships and recursivity, these factors may not always be sufficient to separate them empirically, either because the time frames under study are too short or because both mechanisms are possible in cases of asymmetric diffusion. Therefore, a fruitful additional step to differentiating them is to focus on government goals: If governments are consequence-driven rather than appropriateness-driven, what are the outcomes they are seeking to achieve or avoid and which policies would be most consistent with those outcomes?[310]

Economists tend to approach fiscal system design in terms of maximizing long-term government returns from oil resources.[311] Political scientists have found that control and sovereignty are frequently even more central objectives for developing countries.[312] A recent

[310] Some authors suggest that it may not be possible to accurately identify – or at least rank-order – state objectives, as these may be "multiple, often conflicting, always shifting" (Stopford, Strange, and Henley 1991: 135).

[311] This emphasis on economic measures is apparent even early in the period under study. Northcutt Ely, author of a global survey of oil and gas laws published in the 1970s, identified five common government objectives: (1) compensation for land use, (2) maximum and efficient utilization of resources, (3) generation of tax revenues and foreign exchange, (4) encouraging capital use in the most economically favorable areas, and (5) environmental conservation, implying that four out of five government objectives are economic (Ely 1970: 282-283). Currently, the emphasis on economics is captured by the discourse of "government take" as the basis for comparing fiscal systems – a position that some authors, such as David Johnston (2007), see as misguided.

[312] See, for example, Parra, who suggests that OPEC members were motivated "not primarily [by] money at all, but control" (2004: 146). Similarly, Victor, Hults, and Thurber suggest that control is the greatest motivator for oil-

study commissioned by Brazil's government-owned development bank, BNDES, suggests that states seek to maximize collection, assure good operating performance, and to minimize their own investment into the oil industry.[313] Transparency and sustainability are increasingly emphasized by non-governmental advocates who see these as means of avoiding the negative consequences of natural resource production.[314] Government goals are diverse, and even the simple choice between revenue and control can involve trade-offs and contradictions.[315]

I propose that the three petroleum regimes are sufficiently different that the selection of one over another has historically been reflective of different sets of priorities reflecting either a "logic of consequences" or a "logic of appropriateness." As information and experience about petroleum regimes has accumulated, industry experts have generated specific ideas about the outcomes of different regimes that have informed rational cost-benefit calculations. Similarly, as certain regimes have become associated with specific sets of countries, they have taken on normative and ideational undertones that could influence the process of diffusion. These associations have varied across three distinct periods in industry history, in which the logics of consequences and the logics of appropriateness offered different recommendations to guide policy choices. The remainder of this section explores the three periods, assessing the accuracy of the hypotheses generated in the Theory Chapter. Recognizing the association between each of

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producing states (2012: 126). Krasner, speaking more generally than the oil industry, suggests that developing countries seek "power and control as much as wealth" (1985: 3). Although for much of the history of the industry, issues of control were equated with sovereignty, Marcel suggests that, in the Middle East today, "control" is more focused on industry operations, particularly reservoir management (2006: 40).

[313] BNDES (2009).

[314] Humphreys, Sachs, & Stiglitz (2007).

[315] This point is made by Bressand, who points to the need to make trade-offs among different objectives held by governments (2009: 137). He offers a typology of countries based on different investment priorities, including sovereignty, maximizing development, rent capture, and energy independence (120-121).

the petroleum regimes and exporter country types as well as differences across North and South, that framework projected that emulation and learning should both have been influential in encouraging diffusion of concessions, PSAs, and service contracts in the outward-oriented South. In contrast, emulation rather than learning should have encouraged adoption of service contracts and PSAs in the inward-oriented South. The outward-oriented North, to the extent that it switched from the concession system, should have been adopting the PSA in response to learning.

3.1 Pre-Nationalist Period (1859-1960)

For most of the history of the oil industry, there was only one mainstream petroleum regime, the concession.[316] This system derived from existing mining law,[317] which was eventually broadened to include oil or was replaced by a petroleum-specific law that recognized the special challenges of the resource's fugacious nature, as well as concerns over conservation.[318] In developing countries, concession laws were generally imposed by colonial

[316] For the purposes of this project, concessions, leases, and licenses are all considered to be "concessions." Although there are, in principle, slight variations among these three forms – and even within them (for a discussion of the differences between early U.S. and Latin American concessions, see Blackiston (1940)). See also Smith, who discusses the conceptual differences between concessions and leases as well as those between early and modern concessions, PSAs, and service contracts (1992) – they are typically treated as the same type of regime by industry and legal practitioners. For examples, see BNDES (2009) or Allen and Overy (2013).

[317] In much of the world, the basic framework for oil exploration dates back to the Napoleonic Law of April 21, 1810, supplemented by additional laws and decrees. Among these civil law countries, the existing framework established the principle of state ownership of the subsoil, a right that had to be separately established within common law countries, often leading to pockets of lands still held under private ownership.

[318] The fundamental challenge with petroleum resources – analogous to water rights and wild animals – is that, as a liquid, it is capable of moving across property lines. The production process alters the amount of resources in place as well as the level of pressure in oil reservoirs, which can adversely affect the resources available in neighboring properties. In most countries, where the state owns the subsoil resources, this problem is resolved by setting block sizes, spacing rules, and other terms of leases so as to conserve the resources. In the United States and portions of Canada, where private ownership of the subsoil still exists, this problem has been resolved through the "rule of capture" – whereby ownership rights go to the producer without compensating other parties – combined with state-by-state laws about well spacing and unitization (Lowe 2014).

powers, in a number of cases in the form of mineral codes applied to entire groups of countries,[319] such as France's Sahara Code.[320] These codes favored private corporations, at times also privileging companies of particular nationalities.[321] They typically reflected the priorities of home governments rather than those of host governments.[322] The "optimal" petroleum regime, therefore, was one that ensured ample petroleum supplies for end users.

A handful of countries resisted this model, opting instead for full nationalization – captured here under the title of "service contract regime." Several countries relied on this system from inception. Chile, for example, established a state monopoly on petroleum exploration and production with the enactment of law 4,109 of December 23, 1926. Others nationalized their industries after private companies had already become established, resulting in highly publicized investment disputes. The most prominent early cases include nationalizations by the Soviet Union in 1918 and Mexico in 1938.[323] Because of the stranglehold that the Western oil

[319] These groupings often included the home country – for example, French Guiana, as part of the French Union, was governed by the same laws as France itself (Ely 1961: 60), while Spanish Sahara's mining law – until passage of the Petroleum Resources Development Act of 1958 – was identical to that of Spain (Ely 1961: 133).

[320] The Saharan Code would reportedly become a "bone of contention," particularly in French-Algerian relations (Turner 1983: 58).

[321] For instance, British possessions such as Trinidad and Tobago, commonly restricted petroleum rights to British subjects and "persons or companies whose governments extend reciprocal rights to British subjects" (Ely 1961: 24). In general, both home governments and the oil companies themselves were significantly responsible for the initial adoption of concessions. Their negotiating power, combined with the lack of knowledge of host countries, allowed them to implement highly one-sided agreements (Note 1973: 777).

[322] Quoting Blinn et al., *supra* note 7, at 60-61, Smith notes that this historical record has had psychological effects: "it is hardly surprising that the word "concession" became mentally associated with "underdevelopment" and "political dominance;" this explains from a psychological standpoint, the hostility shown toward this type of agreements [sic]." (1992: 498).

[323] Both of these cases are discussed at greater length below. The Soviet case was driven primarily by ideology and the rejection of private property, although foreign companies continued to operate in the USSR for some time after formal nationalization. The Mexican case similarly followed a bloody revolution in which the winning party sought to reverse the policies of its pro-foreign predecessor, which had spurred popular discontent, labor unrest, and had given rise to rumors of tax evasion and other unethical behavior. Control of oil became enshrined in the national constitution both as a way to ensure sovereignty as well as to gain control over an enormous stream of revenue that

companies held on international markets, such nationalizations generally resulted in oil production being limited to the domestic market.[324] As the market share held by the "Seven Sisters"[325] diminished over time, the nationalized industries' ability to export became largely a function of technological and financial limitations of their national oil companies.

With only these two options available, countries that sought to be part of the international petroleum market had only one "rational" option for their petroleum regime, namely the concession. In keeping with domestic political demands, a handful of nationalist or isolationist states opted for the service contract. Those isolated cases align more closely with a model of independent policy-making than one of diffusion. Likewise, because these countries were outliers in the global system and tended not to be among the most prominent producers, a logic of appropriateness would equally lead other countries to maintain the concession system rather than follow their example. Overall, the lack of choice combined with political domination of much of the world makes it difficult to disentangle coercion and learning during this period, when petroleum regime change remained exceedingly rare.[326]

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could be used by the ruling party (Doherty 2015: 248-250). As in the Russian case, the transition to the service contract was not immediate, and was only fully implemented in the 1950s.

[324] The issue of the coercive power of private companies and their home countries is revisited at length in the following chapter.

[325] The "Seven Sisters" is a phrase coined by Enrico Mattei of Eni referring to the seven private companies that controlled Middle Eastern oil supplies (and dominated global markets) during the pre-nationalization era of the oil industry. Those companies were Anglo-Persian Oil Company (now BP), Gulf Oil, Texaco, Standard Oil of California (the three of which are now part of Chevron), Royal Dutch Shell, Standard Oil of New Jersey and Standard Oil Company of New York (both of which eventually became ExxonMobil). Private companies have since given way to national oil companies in many measures of market power – particularly control over oil reserves – and there has been talk of a "New Seven Sisters" comprising Saudi Aramco of Saudi Arabia, Gazprom of Russia, CNPC/PetroChina of China, NIOC of Iran, PdVSA of Venezuela, Petrobras of Brazil, and Petronas of Malaysia.

[326] In Kobrin's assessment, only "Ten countries nationalized oil production before 1970" (1985: 13).

3.2 Nationalist Period (1960-1980[327])

Following independence and nationalist stirrings throughout the world, a new petroleum regime emerged between 1960 and 1966 in Indonesia.[328] At the same time, the service contract began to appear viable even in – or perhaps precisely among – major oil producers. The introduction and normalization of these systems radically altered the discussion of which regimes were "best" for host countries and private investors, not only in terms of what benefits they might bring, but what outcomes might be avoided.

The PSA represented an attempt to fundamentally redefine the relationship between host government and investor. The primary goal of the laws that gave rise to the PSA was "the return of the control on vital minerals to the State which can be utilised [sic] to the utmost benefit of the people."[329] Indonesia sought to "run [its] own affairs" without sacrificing the benefits of private capital and industry expertise.[330] While leftist groups within the government advocated full nationalization,[331] the reality was that the oil industry in Indonesia was largely still at the

[327] Although nationalism had by no means disappeared by the end of this time period (and has frequently reemerged as an important issue), 1980 marked the beginning of the oil price collapse that remade the industry landscape. This price shift changed the perceptions and realities of what types of policy changes would be possible, which in turn resulted in gradual reevaluations of what the petroleum regimes represented, as discussed in part 3.3.

[328] The constitutional change that necessitated a change to a non-concession model occurred in 1960, but the first PSA was only signed in 1966.

It should be noted that the changes to petroleum regimes that occurred during this period were not simply the result of an intellectual shift. The widespread adoption of alternative regimes was made possible by significant geopolitical changes that empowered developing countries vis-à-vis home country governments as well as oil companies. Those shifts are discussed in greater detail in the following chapter, but include decolonization, Cold War competition between the West and the Soviet Union, and the rise of the nonaligned movement (Marcel 2006: 23), along with the rise of new players within the oil industry (Kobrin 1985).

[329] See Van Swearingen (December 20, 1963).

[330] AmEmb Djakarta (May 7, 1963).

[331] See AmEmb Djakarta (Sept 13, 1967); AmEmb Tokyo (May 31, 1963). For more recent analyses, see Allen & Overy (2013: 3), who argue that the primary benefit from a nationalist point of view of the PSA is that it "enabled

exploration stage.[332] Lacking technological expertise and foreign exchange, while also facing tremendous domestic challenges, the government was not in a position to expel the private sector. Instead, in the words of Robert Fabrikant, "The production sharing concept represented an effort to divorce foreign capital from foreign ownership"[333] in order to make foreign participation politically palatable.

Beyond the question of control that lay at the heart of the PSA – and which was in many ways its most controversial aspect[334] – the regime was designed to achieve two additional objectives: knowledge transfer and revenue/foreign exchange maximization. The first of these themes is repeatedly highlighted in domestic and international speeches by General Ibnu Sutowo, President Director of Pertamina, then Indonesia's oil regulator and national oil company. Acknowledging that Indonesia was "still backward, like in know-how and skill,"[335] Sutowo advocated a philosophy of "learn while you work."[336] By participating in management decisions and mandating a larger Indonesian workforce,[337] Indonesia would develop the expertise that

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the government to maintain formal ownership of the resources in question, while permitting the private sector to exploit them" and thereby overcome the most controversial aspect of the concession regime.

[332] AmEmb Djakarta (Jan 15, 1971).

[333] Fabrikant (1975: 334).

[334] Specifically, the companies operating in Indonesia were highly suspicious of the "management clause" that was a central element of the PSA and required companies to request approval for operational decisions, fearing that it could lead to poor operational decisions, allow the government to legally nationalize their projects, and could affect their U.S. tax burden (Fabrikant 1975: 313). Ultimately, in practice Pertamina made little use of this clause (316).

[335] Quoted from Sutowo's speech "The Role of Oil in National Life" as published in Fabrikant (1973: 475).

[336] AmEmb Jakarta (Nov 6, 1973).

[337] Local content and training requirements are a common feature of PSAs, though not universally applied. However, in the case of Indonesia, the "educational aspect [was] considered particularly important" (Barnett et al. April 30, 1968).

would allow it to become both a better regulator and an active industry participant.[338] Likewise, Sutowo acknowledged that oil was a central part of the national development plan. Oil was Indonesia's largest source of foreign exchange and non-aid financing, and was expected to account for over 30 percent of the costs of the country's 5-year development plan.[339] By taking a participatory stake in oil projects, Indonesia could encourage companies to increase production while benefiting equally from price increases.

Advocates of the service contract similarly prioritized the issue of control, but chose a more "confrontational" solution. The meaning of service contracts to host governments is probably best captured in OPEC's negotiations over "participation" that occurred through the 1960s and 1970s. Although initially sparked by a push for more revenue following Venezuelan success in winning 50-50 revenue distribution, the concept of participation represented a "new ball game" in which host countries "are seeking to establish [a] totally new relationship between oil companies and consumers based on [the] principle that producers have the right to legislate terms and conditions on which their oil resources will be exploited."[340] Although originally participation was not expected to amount to full nationalization, for resource-rich countries that had the reserves, technology, and financial wherewithal to take full control of the oil industry, service contracts increasingly appeared as the most effective means of seizing control and –

[338] Sutowo likewise argued that Indonesia would strongly benefit from learning not just from private corporations, but from other countries. In an address at the Science Education Teaching Institute, Lt General Dr Ibnu Sutowo reflected on his trips to Saudi Arabia, Venezuela, Baghdad, and Tehran to meet with petroleum experts in the governments of major oil producing countries to develop knowledge about "all the particulars of the oil industry" (Sutowo 1972: 10-11). This emphasis on learning eventually led Indonesia to allegedly look down on several Arab countries that they considered too "lazy" to develop competent national oil companies (AmEmb Jakarta, May 25, 1973).

[339] Fabrikant (1973: 495).

[340] AmEmb Tehran (Feb 7, 1971).

secondarily – ensuring maximum revenue and conservation of resources for national development.[341]

Thus, during the nationalist period, the stated objectives of host countries were three-fold: (1) control, (2) revenue maximization, and (3) knowledge transfer. Although seemingly complementary, these three goals could come into conflict when the host country's level of expertise was insufficient to manage its oil sector without losing oil output and revenue. The precise prioritization therefore determined which system was optimal. For countries that saw control as the key to revenue and had sufficient knowledge to manage their own industries – as was the case in much of the Middle East, where large-scale production was already in place[342] – service contracts eventually appeared to be the "optimal" regime.[343] In contrast, outward-oriented countries like Indonesia[344] prioritized knowledge transfer over the other two objectives in the short- to medium-term, opting for the PSA. Because concessions were the default petroleum regime, countries in which the term "concession" carried few, if any, historical burdens found ways of maximizing their revenues through the tax code, avoiding the conflicts that accompanied a change in fiscal regime.

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[341] This process was drawn out, and in many cases was not finalized for years after the most heated parts of the participation negotiations. However, the negotiations offer insight into the objectives that ultimately led to the service contract regime in this region.

[342] There is some debate about how knowledgeable the Middle Eastern host governments truly were about their resources and the running of the oil industry, with expertise varying by country. Ghobashy argues that "Iraq, Egypt and Algeria were able to place trained personnel in management and engineering positions and thereby achieve a degree of success in their nationalization actions," and suggests that other Middle Eastern states could borrow resources from each other to achieve similar success (1974: 298).

[343] In fact, Zakariya argues that "direct exploitation of petroleum resources […] should, of course, always be the ultimate aim" of host governments, ahead of participation (1972: 224).

[344] Indonesia represents, in this case, an outward-oriented country given its interest and dependence on external capital and expertise – whether from the private sector, aid agencies, or other countries, including the United States, the Soviet Union, Japan, and China.

As perceptions about "rational" regime choice evolved during this period, learning thus appeared to point to two divergent outcomes. Countries with established oil production whose de-colonization process stimulated nationalist or inward-oriented movements appeared to be opting increasingly for service contracts. In contrast, PSAs were favored by de-colonizing countries with low levels of oil production and could not afford to be self-sufficient. A third group of countries opted to wait until more information was available – in itself a form of learning – maintaining the concession system.

Emulation, on the other hand, would have pointed to a different set of outcomes. Countries operating with the objective of choosing an "appropriate" or "aspirational" petroleum regime would be oriented towards prominence and visibility. Indonesia, while an established oil producer and member of OPEC, was still a relatively small player in international markets when compared with either other OPEC states or the United States. State Department memoranda originating outside of Indonesia during this period almost never mention the Indonesian alternative. The OPEC nationalizations, on the other hand, were widely discussed and gained greater prominence over the course of the decade as a result of the oil shocks. Representing a powerful case of Third World resistance and success against perceived neo-imperialism, OPEC was far more likely to be the standard-bearer for other countries' policy aspirations than Indonesia. Thus, emulation might take one of two forms in this period: countries identifying with OPEC and the broader cause of New International Economic Order (or, alternatively, with the Soviet Union) would strongly favor the service contract regime, while those identifying with the "free world" and the United States would favor the concession. To the extent that emulation would result in PSA adoption, it would be limited to Southeast Asia, where the Indonesian experience would have greater visibility. This implies that diffusion of the PSA outside of the

region – which did take place in parts of Africa during this period – is unlikely to have been caused by emulation.

3.3 The New Status Quo (1980-Present)

Perceptions of how different fiscal regimes meet government needs began to shift in the 1980s and 1990s. First, experience with PSAs and service contracts among major producers in both the exploration and production stages provided a better understanding of their consequences for host governments. Second, ideological change – particularly in the form of the Washington Consensus – undermined confidence in the efficiency of government ownership as a solution to national development challenges.[345] Third, the oil price collapse of the 1980s severely weakened the financial position of oil-producing countries and revealed the need to accommodate price volatility in fiscal regimes. Combined with growing concern about the end of "easy oil," this development also placed greater emphasis on the allocation of risk. This period also witnessed evolution of each of the fiscal regimes as they attempted to meet changing government and investor demand. Fourth, the emergence of an academic and political discussion about the "resource curse" in the 1990s raised awareness of the importance of governance issues and of getting fiscal design "right."[346] Finally, oil companies' experiences with nationalizations in the

[345] Ideological changes had also been important in the previous period, in the sense that they undermined the initial cognitive basis for the concession system. Although the Washington Consensus questioned the efficacy of government, economic theory also increasingly recognized certain problems with the concession system and accepted the legitimacy of developing country concerns. In particular, experts increasingly recognized the problems of transfer pricing and "sitting on a concession" in the absence of contractual safeguards, acknowledged the domestic benefits of nationalization and restrictions on foreign direct investment, and accepted states' legal rights to nationalization (Rodman 1988: 58, 63, 67). See also Jodice on the logic in support of expropriation (1980: 180), as well as Kobrin (1980).

[346] There are at least three main strains of the resource curse literature, all of which have influenced policy discussions, in large part owing to their influence in international institutions like the World Bank and the IMF. These variations associate high levels of oil production with (1) weaker economic performance (see, for example,

previous period cemented their concern with ensuring the stability of their contracts in the long-term.

Together, these factors amounted to a change in understanding of the meaning of the different regimes as well as a re-prioritization of government objectives. Experts, in the form of consultants, lawyers, and economists, have been at the forefront of this redefinition. Although they have been a fixture in petroleum regime design for much of the industry's history, they have become more visible, lending host governments both expertise and legitimacy.[347] With the major nationalizations completed and the normalization of each of the three petroleum regimes (coupled with a better understanding of their consequences), states and advisors have been able to develop a more nuanced picture of "best practice" in fiscal regime design. While virtually all experts make it clear that regimes should be tailored to the host country, it is also common practice to make extensive use of "comparables." [348] Experts do not reinvent the wheel for each

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Sachs and Warner 1995), (2) lower democratization (see Ross 2001), and (3) greater conflict (Humphreys 2005; Fearon 2005).

[347] Consultants offer several potential advantages to host governments. First, they can make up for a country's lack of expertise, as was the case in Africa and Eastern Europe. Second, they can lend host governments credibility with investors and with their own populations, both advantages sought particularly in South America and Asia. In a related point, bringing in consultants can offer incumbent politicians some degree of protection vis-à-vis their own political constituencies, which is especially valued in the Middle East and Asia (Oil Consultant, July 22, 2015b).

At the same time, reliance on consultants may have disadvantages. Foreign consultants may be extremely expensive by local standards, breeding resentment among experts within the government. This can be aggravated by the fact that, because the pool of fiscal regime experts remains small and is overwhelmingly based in developed countries, outside experts may not have much familiarity with the host country and its particular needs or circumstances, risking generic or even inappropriate advice. Moreover, because remuneration and repeat business favor advising the private sector rather than the government side, it can be difficult to find high-quality consultants (IGO specialist, November 13, 2014; Academic and oil lawyer, July 15, 2015).These issues may be mitigated over time as the diversity of players continues to grow: Lawyers, accountants, economists, non-governmental organizations, international government organizations, and bilateral development agencies are all increasingly involved in advising governments.

[348] The recognition that there is no one-size-fits-all policy is strongly emphasized today, but was already noted in earlier periods, including by Fabrikant, who mentions the importance of geology, market factors, political stability, macroeconomics, government objectives, business-government objectives, and domestic capabilities as factors that influence the design of petroleum regimes (1975: 333). Unfortunately, not all advisors follow this practice; there

consulting assignment, but use other countries as models, leveraging those experiences as indicators of likely outcomes for their clients. And while they routinely talk about differences between countries with more or less developed legal systems – roughly equivalent to North and South – they also use several additional levels of classification to determine comparables.[349] Although countries in some regions might be more inclined to focus on the policies of their neighbors, publicly available reports suggest that advisers tend to draw on examples from around the world:[350] In a 2008 report to the state of Alaska, David Wood & Associates developed a comparison using 23 countries and regions covering six continents, of which 17 were developing countries.[351] Likewise, in a report to Brazil's BNDES prepared by Bain & Company and Tozzini Freire Advogados in 2009, ten countries were analyzed, including both developed and developing countries from North America, Europe, the Middle East, Africa, and Asia.[352]

From this global vantage-point, based on interviews and secondary sources, there emerge three common configurations of national characteristics, along with the "best" regime for each case:

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have been some notorious cases of consultants blatantly copying another country's law (Academic and oil lawyer, July 15, 2015).

[349] For an example of the emphasis on legal systems, see BNDES (2009: 29-30), which describes the prevalence of concessions, PSAs, and service contracts in terms of the stability of the host country's institutional system. Speaking more generally, Smith and Wells state that they "know that western concepts, technologies and institutions cannot be automatically transferred to developing countries. Their [the authors'] experience confirms that Western notions of contract are subject to substantial adaptation in environments that have different histories and are changing rapidly" (1985: xi).

[350] Interviews suggest that Asia and Africa tend to be more regional in their focus, while Latin America, in particular, compares itself with countries around the world (Oil Consultant, July 30, 2015). This is consistent with Khelil's global survey of fiscal systems, which concludes that Latin America competes globally (1995: 3). David Johnston similarly suggests that petroleum regimes tend to follow a regional pattern (2007: 57-58). Focusing solely on competition across PSAs, Bindemann likewise concludes that competition is amplified within regions (1999: 87).

[351] Wood (2008).

[352] BNDES (2009).

Frontier Developing Country: Frontier countries have little or no history of exploration or production, perhaps because their economies have been closed, whether by political choice, sanctions, or violence, or because their geologies have, under older technologies, been viewed as uncommercial. Their governments are extremely inexperienced when it comes to regulating or negotiating with the petroleum sector. Oftentimes, these countries have no separate petroleum law or rely on laws inherited from colonial powers, have no independent petroleum ministry, and have only a minimal understanding of the functioning of global petroleum supply chains and market functions.[353] They rely heavily on external consultants when designing their fiscal regimes, frequently hired and paid for by multilateral or bilateral development banks. Recent examples include Cambodia and Mozambique. These countries have no domestic oil industry, have limited access to capital, and are in a very weak negotiating position vis-à-vis potential investors.[354] From the perspective of oil law diffusion, then, these countries tend to fall into the outward-oriented South.

In light of their limited negotiating leverage and high developmental needs, such countries are advised to prioritize maximizing exploration activity over government revenues and control.[355] By providing generous terms,[356] countries can attract companies

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[353] These problems capture two of the four most common challenges for developing countries a "credibility problem" caused by weak institutions (Daniel, Keen, McPherson 2010: 76) and a problem of asymmetric information where oil companies possess a powerful informational advantage (77).

[354] These investors are, contrary to popular conceptions, not typically Supermajors like ExxonMobil or Shell. Rather, the types of companies most likely to be active in frontier countries are small-cap independents.

[355] These are two of four problems identified by Paul Collier. The first is the problem of underexploration (Daniel, Keen, McPherson 2010: 76), which can be produced by a range of factors but ultimately greatly increases the risks of investment and causes companies to demand greater returns. Likewise, underexploration also reduces the number of potential investors as many are unwilling to bet on uncertain geologies. The other issue is that of capital and

and capital to engage in high-risk exploration. Once the resource base has become better established, countries can reassess their fiscal regime (and are counseled to grandfather existing contracts into this system; that is, not apply the new regime retroactively) to reflect to reduced investment risk.[357] Apart from recommending an attractive investment environment, advisors to this type of country frequently recommend the use of petroleum regimes that reflect the countries' lack of regulatory sophistication. Although PSAs carry many advantages, they are almost universally regarded as exceedingly complicated–sometimes excessively so.[358] As self-contained laws, PSAs must anticipate all potential conflicts and issues and incorporate them up-front, placing a premium on host country negotiating skills.[359] Additionally, production sharing formulas can often be complicated

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consumption scarcity; because countries have so little access to capital, investors can demand much higher returns than in more established or wealthier countries (Daniel, Keen, McPherson 2010: 77).

[356] Looking at the terms rather than fiscal system, such non-onerous terms might include a government take starting point around 30 percent for new oil states, which is roughly consistent with the government take offered by Ireland (Johnston 2008).

[357] While this appears to be a logical progression, countries must be careful with this strategy; it is not uncommon to overestimate the attractiveness of the geology and underestimate perceived risk, as Brazil discovered when it attempted to implement a new petroleum regime after its sub-salt findings, discussed in the case below. Moreover, offering generous terms can be politically costly, as doing so offers opposition leaders an easy opportunity to accuse the incumbent of signing "sweetheart deals."

[358] This point is also made by BNDES, which identifies complexity as one of three major disadvantage of PSAs, noting that "remuneration of the parties in the PSA (cost-oil and profit-oil) is extremely complex" (2009: 90-91). For some advisors, this complexity is reason enough to avoid PSA structures, while others argue that a lack of capacity is insufficient reason for not choosing a particular option (IGO specialist, November 11, 2014). This same point is made by Calder, who states that, "There is a strong case for arguing that *if* a progressive profit-based resource tax regime has significant policy advantages, then *all* such countries, no matter how poor their levels of capacity and governance, should be capable of developing the capacity needed to administer such a regime to the standard required to achieve those advantages. The standard required is not necessarily perfection" (Daniel, Keen, McPherson 2010: 324). A more cynical perspective would suggest that consultants actually prefer complexity for its own sake, and that consultants have been selling host countries "a bill of goods" with PSAs, which are less beneficial from a financial perspective (Oil & gas finance specialist, June 13, 2015).

[359] See Radon (2005: 70), who sees this as a disadvantage of the PSA system. The self-contained nature of PSAs is the second major disadvantage identified with BNDES (see footnote 64), with national oil company participation being a third common trait (2009: 91) – though this final point may not be universally perceived as a negative.

to implement and difficult to monitor relative to concessions, which use a simpler royalty plus tax structure.[360] Overall, advisors appear to favor concession systems for frontier countries, although PSAs with generous terms are also accepted, with the caveat that they may be more difficult to implement effectively. This is consistent with the expectation that learning will be influential in promoting the concession and PSA in the outward-oriented South.

Established Developing Country: Unlike frontier developing countries, established developing country oil producers frequently (though not always) have experienced oil ministries, established oil laws, a strong understanding of their resource base, and access to capital backed by their oil sector.[361] By virtue of longer histories of production, the resource bases may no longer be as "easy" to produce as in previous periods, requiring more advanced technologies such as enhanced oil recovery or ultra-deepwater production, or may require more capital and managerial skills by virtue of project size and complexity. Nevertheless, these countries' reserves are large enough to be highly attractive to foreign investors and have relatively low exploration risk. In sum, Northern countries have fairly well-developed institutional environments, combined with a strong competitive position. They often also have the domestic expertise to manage their own industries, if they so desire.

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[360] Concessions can incorporate more complicated formulas, such as sliding royalties, but even these structures are generally considered to be easier to monitor.

[361] Notably, it is not unusual for national oil companies with formal ownership of reserves to have higher credit ratings than their sovereigns. This situation can increase the appeal of the NOC as a potential cash cow for the national government, as most dramatically exhibited by PdVSA, which within a generation was transformed from one of the most admired and professionalized national oil companies to a cautionary tale as the government used its credit rating and reserves to borrow for massive social programs.

Because of their significant advantages, established developing countries have substantial flexibility in the type of petroleum regime they can implement. Unless the country has a history of fiscal instability that demands special investment protections offered under PSAs, advisors are likely to be agnostic with respect to petroleum regime choice, advising in favor of either PSAs or concessions for those countries seeking to attract foreign investment, and focusing primarily on maximizing returns and investment.[362] It is extremely unlikely that any advisor would counsel in favor of a service contract regime,[363] although countries inclined to this system would be unlikely to seek out external advice. Overall, these assessments would suggest that learning on the basis of external consultants would favor concessions and PSAs in the periphery, whether inward or outward-oriented. The service contract, in this period, would therefore be more likely to be chosen on the basis of emulation or through direct government-to-government learning.

Developed Country: While many experts argue that the level of economic development is not central to fiscal system design, there is no question that OECD or "Western" countries are set apart from developing countries. They almost universally operate under the concession regime, and a switch to alternative regimes is considered

[362] While most interview respondents expressed a personal regime preferences, all agreed that the choice ultimately falls to the client and that no oil company would walk away from a deal on the basis of it being a concession or PSA (Oil & gas lawyer, December 19, 2015). Even so, they may be more inclined to advise in favor of concessions (or, alternatively, especially generous PSAs) if production is so mature as to risk becoming uneconomical. This is rumored to be a possibility in Indonesia, where certain oil producing areas are no longer attracting much investment.

[363] In an interview reported by Marcel, even Saudi executives do not necessarily consider the service contract the "rational" or "right" thing to do, and might opt for an alternative system if they "were all starting over like the Iraqis." Political realities, however, prevent any change to this system (2006: 47).

"inconceivable."[364] In spite of the fact that developed countries such as the United Kingdom and Canada's Alberta province are among the most frequent offenders in terms of changing their fiscal system,[365] they do not face the same consequences for doing so,[366] and therefore benefit from the greater regulatory flexibility offered by the concession system.[367] These countries rely primarily on their own experts, either from the private-sector or within the government, and may not be exposed to ideas that challenge the prevailing systems.[368]

Although developed countries might rationally choose a PSA regime, there are several reasons why a concession system might be seen as "optimal" for this type of country. First, because developed countries typically have highly diversified economies and are less reliant on oil receipts for their national budgets, they may be less likely to prioritize

[364] Oil & gas lawyer (December 3, 2014); Interview with two oil & gas consultants (July 23, 2015).

[365] Cameron and Kellas state that OECD countries "appear just as likely to change fiscal terms as those in the developing world" (2008: 2). Not only is the frequency of change at least as high as in the developing world, but changes in the OECD, such as in the UK, Alberta, and Alaska, have been among "the most pronounced" (10). It should be noted here that these changes take the form of alterations in the tax structure or environmental regulations, not actual changes in petroleum regime.

[366] This is a debated point – although some authors, such as Broadway and Keen, argue that "countries with a strong reputation for good governance [such as the UK] may be able to change tax rules frequently without very marked damage to investors' confidence" (Daniel, Keen, and McPherson 2010: 57), others have pointed out that these changes – as well as similar measures taken in Alberta – carried real costs to the host governments in the form of reduced investment (Oil & gas consultant, December 9, 2014).

Sometimes, as Khelil notes, developed countries may be willing and able to adopt fiscal policies that are "tougher" than what their geological competitiveness would allow (1995: 3).

[367] Notably, contracts – including, theoretically, PSAs – in developed countries have far fewer protections for investors than those offered in developing countries. As Parra notes, developed countries do not typically include provisions for international arbitration or choice of law other than that of the host country (2004: 9), representing something of a double-standard for home countries advocating on behalf of their oil companies overseas.

[368] IGO specialist (November 13, 2014). However, as Wood's report to the state of Alaska demonstrates, external consultants will, at times, present alternative fiscal regimes for consideration (2008).

revenues over other government objectives.[369] United States policy, for instance, is particularly effective at maximizing investment into oil exploration and production rather than maximizing government take. This prioritization arguably is superior from a national welfare perspective,[370] and also helps reduce imports. Second, because both systems can be made largely identical in terms of fiscal impact and government control and because developed countries already have long histories of using concessions, there is little apparent incentive to change regimes (and companies are putting little pressure on developed country host governments to do so). Finally, because developed countries lack the historical burdens of the association between concessions and colonialism, they face far fewer concerns over sovereignty and therefore gain fewer political advantages from the PSA than do developing country governments. Overall, advice to developed country governments appears to support the model's assumption that learning (and emulation) favors the concession in the North, and offers little support for the possibility that learning might also promote the PSA among this type of country.

Just as understandings of what types of regimes might be favored by learning evolved after the 1980s, so did likely patterns of emulation. Although PSAs had made few gains for much of the preceding period, they began to gain greater visibility in the mid-1970s. By 1980 nearly one-fifth of all countries had adopted the PSA,[371] broadening its regional exposure and

[369] Some developed countries, such as Norway, are in fact relatively resource-dependent. According to the European Commission, oil and gas account for over one-fifth of Norway's GDP and two-thirds of its exports.

[370] Arguably, governments benefit more from royalties and taxes than from equity stakes in oil and gas investments because these more predictable, less risky income streams greatly enhance their available leverage (Oil & Gas Finance Specialist, June 13, 2015). It should be noted that this case was made by only one interviewee.

[371] Author's calculations.

prominence among potential reformers, until, by the 1990s, the PSA had become "fashionable."[372] Moreover, Indonesia had become far more visible on the regional and world stage. By 1980, it was the world's 15th-largest oil producer and its region's second-largest producer after China. With Algeria's adoption of the PSA in 1973, oil-producing countries in Africa also discovered a regional role model with a strong production record. Thus, if we assume that countries prefer to choose their role models from among prominent peers with successful oil industries, the potential for PSA emulation increased dramatically in Southeast Asia and Africa, and to a lesser extent in other parts of the world. At the same time, the 1980s weakened the appeal of the Gulf States' oil-based development model, undermining the service contract's attractiveness as a policy to be emulated.[373] Finally, the rise of North Sea production reinforced the concession system among developed countries.

3.4 Logics of Consequence and Appropriateness

The preceding discussion offers several insights into the question of how to differentiate between learning and emulation over time. Prior to the 1960s, the lack of policy choices and their severe consequences suggest that changes were the result of domestic politics rather than diffusion by either mechanism. The nationalist period of 1960 to 1980 introduced two "rational" alternatives under which post-colonial states with established industries were inclined towards service contracts as a means of asserting control and sovereignty, while post-colonial states that were reliant on foreign capital and technology would adopt the PSA as a result of learning when

[372] Oil & gas consultant (June 23, 2015). Another consultant (July 30, 2015) described PSAs as "coming into vogue" during this time.

[373] As one interview participant stated, no one wants to be Abu Dhabi (Think tank scholar, December 18, 2014).

facing strong nationalist demands for change, and would maintain – temporarily, at least – the concession if facing less domestic pressure. However, because of the relative prominence of the OPEC countries opting for nationalization, emulation would not have supported both new alternatives equally. Instead, emulation during this period should have strongly favored service contracts among developing countries.

By the 1980s, as more information about the consequences of the regimes became available, cost-benefit analysis would eventually strongly discourage the service contract among all countries. Emulation should follow a similar pattern, though for slightly different reasons. Instead, patterns of learning would become somewhat more differentiated even though (assuming that the terms were well-designed) all countries could feasibly choose either a concession or PSA regime without severe consequences. On the whole, learning among developed and frontier countries should favor concessions while developing, mature producers with colonial histories might gravitate towards PSAs. Emulation, on the other hand, would be less likely to differentiate among different types of developing countries, encouraging PSA adoption across the global South.

The following table summarizes the implications of what countries and consultants most likely perceived as either “optimal” or “appropriate” over different time periods. To the extent possible, the table adopts the same terminology applied to mechanisms of diffusion presented in Chapter 2. As the table demonstrates, there are several points of divergence in the recommended petroleum regimes.

TABLE 13. COMPETING LOGICS OF CONSEQUENCES AND APPROPRIATENESS APPLIED TO PETROLEUM REGIMES

		Logic of Consequences	**Logic of Appropriateness**
Pre-1960	South	Concession	Concession
	North	Concession	Concession
1960-1980[374]	South	Service Contract (Inward) PSA (Outward)	Service Contract (Inward) Concession (Outward)
	North	Concession	Concession
1980-Present	South	Concession (Inward or outward frontier) PSA (Inward or outward established)	PSA
	North	Concession	Concession

4 Evaluating the Evidence

A central insight of the obsolescing bargain model[375] developed by Raymond Vernon is that host countries tend to operate at a significant informational disadvantage vis-à-vis

[374] For the purposes of maintaining consistency with the terminology in Chapter 2, I use "inward-oriented" to describe politicized, control-oriented countries (such as the Arab OPEC states) and "outward-oriented" to denote politicized, knowledge- and investment-prioritizing countries like Indonesia.

[375] According to the obsolescing bargain model, foreign direct investments – particularly in natural resources projects – undergo significant changes in bargaining power between investors and host countries over a project's life-cycle. At the earliest stages, before any investment has been made in a project, the investor holds disproportionately high bargaining power vis-à-vis developing countries. These investors benefit from superior access to technology, capital, and information and use this to obtain highly favorable deals. Once a project has reached completion and the investor has sunk significant resources into the project, however, the bargaining power shifts to the host country. Investors can no longer credibly threaten to withdraw their assets, which are fixed, whilehost countries have developed greater expertise in the industry and the project could conceivably be operated by host country nationals. Host country governments therefore face strong incentives to renegotiate the terms of the investment (Vernon 1971).

international investors.[376] Government officials frequently lack all but the most basic knowledge of the petroleum industry, have little or no negotiating experience, and often feel intimidated by their corporate counterparts.[377] This holds true not only for the early 1960s, when the Shah of Iran reportedly described the governments' knowledge in terms of "just walking in the mist; not in the dark, but it was a little misty,"[378] but also applies to many contemporary cases. As one industry consultant stated, most of the politicians probably wouldn't be able to explain in any detail what is in their contract.[379]

A disadvantage of this sort, however, does not imply that host governments are helpless or destined to strike unequal bargains. Countries are able to develop in-house expertise,[380] draw on the support of foreign governments,[381] or hire private sector advisors[382] in order to improve

[376] This is particularly true in the early stages of developing natural resources industries (Vernon 1967; Vernon 1971; Moran 1973). The government's informational disadvantage was twofold: First, many states had little understanding of the operations of the oil industry and consequently took a weak negotiating stance (Bergsten, Horst, and Moran 1978: 137-138). Second, states lacked the expertise to supervise oil companies and enforce the terms of the deals that were struck (132).

[377] See, for instance, Turner, who states that host governments' "knowledge of the complexities of the industry was scanty, their experience of serious companies was limited and their awe of the companies was great." (1983: 94-95). The consequence, as Daniel, Keen, and McPherson point out, could be "one-sided agreements" in which governments lacked the power to renegotiate or take an active role in industry (2010: 94-95).

[378] Turner (1983: 94-95), quoting Sampson (1975: 160). In spite of already being well-established as producers, according to Marcel, the Middle Eastern states "were ill informed up to the 1970s" (2006: 33).

[379] The level of knowledge held by government officials does vary, however, and others suggest that governments and publics are becoming better informed, particularly with efforts to promote transparency.

[380] As one consultant pointed out, there is a need for some degree of in-house expertise even when external advisors are brought in to assist on a project, because "if you don't have someone to evaluate the advice, it's tough" (Oil & gas consultant, December 5, 2014).

[381] Kuwait, for example, received advice from the British government in its dealings with foreign investors (Turner 1983: 69-70). Similarly, as discussed in Section 4.1, Malaysia received advice from the government of Indonesia when developing its oil law and setting up a national oil company. Norway has also worked with several governments on developing oil laws and improving governance through its development agency, Norad.

[382] According to some practitioners, the growing use of private sector advisors has also resulted in increasing complexity of contracts (which may in turn drive even greater reliance on external advisors). Thus, Talus, Looper, and Otillar state that "Part of the hybridization of Host Government Contracts, and the inclusion of new layers of complexity, limitations on IOCs recovery and maximization of local revenues, while still maintaining financial

their negotiating and enforcement capabilities – and have been doing so since the beginning of the 20th Century.[383] This section examines the ways in which specific states have come to adopt their petroleum regimes over time, guided by a combination of learning and emulation. The case studies represent a range of outcomes, with some demonstrating the ways in which learning and emulation can work in isolation (largely coinciding with the Mexican and OPEC cases), complement each other (as occurred when PSAs initially spread from Indonesia to its neighbors), or undermine each other (as seen in Russia, where domestic politics produced a shift from one mechanism to another, with significant policy implications). All cases represent examples of policy diffusion that have been extremely influential, not just to the countries themselves but to the oil industry at large. They also represent cases in which policy change was a choice rather than the result of external imposition.

4.1 Indonesia and its Neighboring States

Although, as the origin of the PSA, Indonesia does not represent a case of diffusion so much as innovation,[384] its experience nonetheless offers insight into the role of learning. Indonesia's development of the PSA offers four lessons: First, the PSA emerged in a context of political upheaval and intense domestic rivalries; innovation and implementation of the law was

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incentives for increased oil and gas exploration is likely due to State governments hiring this expertise that was previously held solely within the IOCs themselves" (2012: 191). As noted previously, consultants may also be guiding clients towards more complex contractual forms because it promotes their business.

[383] According to Turner, "In general, from the 1920s onwards, the companies had to win concessions from governments which had a fair idea of the potential fortunes at stake and were fully capable of haggling with various suitors." (1983: 69).

[384] For details about why Indonesia proved to be "a principal innovator in government-company relations" (4) when its position in international markets did not differ substantially from other developing oil-producing countries, see Aden (1988). For a broader discussion about the sources of regime innovation that focuses on dissatisfaction with the energy status quo, see Colgan, Keohane, and Van de Graaf (2012).

heavily influenced by individual political needs. Second, although the PSA was doubtlessly an Indonesian invention, it was influenced by and evolved in response to interactions with other producing governments and with private consultants. Third, companies and governments responding to the PSA proposal relied heavily on teaching and education of the Indonesian government in an effort to preserve company interests. Finally, once it successfully implemented the PSA, Indonesia actively promoted it abroad through government-to-government cooperation.

Upon achieving independence, Indonesia inherited an oil industry dominated by three IOCs (Shell, Stanvac, and Caltex) operating under concessions based on Dutch colonial mining law. Although the new government considered this regime exploitative and expressed its intention to assert national control in the 1945 Constitution, it was not until Law No. 44 (1960) during Indonesia's Guided Democracy[385] period that change was initiated.[386] The government chose not to issue further concessions and launched drawn-out negotiations with the three majors[387] in order to establish sovereignty over its oil resources. The outcome was the "Contract

[385] This period was marked by accumulation of power by Sukarno and the army, fewer political parties (after imposing a ban), greater political stability, revolutionary rhetoric, and greater political support for Indonesian negotiators. It further involved the re-entry of Japanese companies (under the efforts of Ibnu Sutowo; see Aden 1988: 266) into the Indonesian oil market, weakening the position of the IOCs, as well as the establishment of three national oil companies (Aden 1988: 176-177).

[386] Machmud (2000: 45-48). Negotiations over tax levels and specific commercial arrangements did take place prior to 1960, yet none of the proposed changes amounted to a change in regime. This early negotiating experience was, however, useful for the companies and the Indonesian government in establishing some level of mutual understanding as well as experience with the process itself. However, a lack of expertise on technical issues remained a problem on the Indonesian side even after the mid-1950s (Aden 1988: 173).

[387] These negotiations were at times acrimonious, involving exchanges of ultimatums and threats of IOC withdrawal from Indonesia (although Caltex's lawyers successfully kept the relationship from becoming too adversarial, as described by Aden 1988: 225-226). They were also at times also confusing, owing to infighting among various Indonesian ministerial heads seeking to assert jurisdiction (Aden 1988: 208). Thus, formal negotiations with Saleh, who would become Indonesia's primary negotiator, did not commence until August 1961 (Aden 1988: 221).

Beyond IOC unwillingness to set a negative precedent or weaken their rights, talks were complicated by Sukarno's nationalist leanings and Indonesia's entry into OPEC in 1962 (Barnes 1995: 12). Ultimately, the Kennedy administration involved itself as a mediator (and consciously not an advocate for the companies) in the negotiations,

of Work" (COW), which gave the government improved returns and some appearance of control. Officials, however, quickly grew disappointed with the COWs, which fell short of the desired degree of management control.[388]

The impetus for further change came in 1965, when the Sukarno regime ended in the aftermath of a failed Communist coup and gave way to General Suharto's New Order government. Political purges and new appointments altered the balance of power among Indonesia's oil ministers, resulting in the concentration of power in the hands of Ibnu Sutowo, head of the national oil company, Permina,[389] and Minister of Mines, Oil, and Natural Gas.[390] In large part, the push to transition from COWs to PSAs – of which he was the primary author – was the result of his desire to solidify his position.[391] Beyond the advantages of the PSA outlined above, this contract form had personal benefits for Sutowo. Specifically, by receiving payment in kind, Sutowo's Permina, rather than the Ministry of Finance, would be able to control the income from foreign oil investments.[392] Further, Permina would be the entity vested with management rights, and therefore would be responsible for asserting control over operations.

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sending a personal emissary, Democrat Wilson Wyatt, along with oil consultant Walter Levy and State Department lawyer Abram Chayes. In large part owing to this involvement, Sokarno himself became involved in the negotiations, creating the conditions for agreement (Aden 1988: 233-234). The result was the Tokyo Agreement of 1963, which finalized the terms for the resulting contracts.

[388] While Saleh's initial assessment of the COWs was that the government had obtained "ninety percent" of its objectives (Aden 1988: 237), this view changed over time. As Machmud notes, "a deep sense of disappointment and frustration among the policymakers of the Republic arose in the years following the advent of the COWs regarding the actual results of the long years of negotiations. If "control" was the objective, very little had been achieved indeed" (2000: 49, 60). Oon likewise characterizes the effects of the COWs as "illusory" (1986: 40), and Sutowo has been quoted as saying that, "COWs are just concessions with a new suit on" (Johnston 2008: 34).

[389] Permina eventually was restructured and renamed Pertamina, taking on the role of regulator as well as national oil company.

[390] Aden (1988: 271).

[391] Aden (1988: 300).

[392] Aden (1988: 302-304); Oon (1986: 33).

Finally, in the event of successfully implementing the PSA, Sutowo would be able to undermine his chief rival in the oil industry, Bratanata, who had replaced him on the Cabinet and openly advocated in favor of the COWs.[393] Drawing on his experience negotiating with Japanese and American independents during the early 1960s, Sutowo was able to attract a new investor under the novel PSA format in 1966.[394] In so doing, he gained Suharto's open support, solidifying his leadership in the sector.[395] By proving that he could attract investment under a PSA framework, Sutowo was able to require all subsequent Indonesian contracts be PSAs and – with the threat of increased competition from independents – was able to transition the COWs to the new contractual form over strenuous company objections.

Indonesia did not enter into these negotiations alone. The country had several advisors, most notable among whom was Mr. Cawley, former Deputy Oil Minister and Chairman of the Oil and Gas Conservation Board of Saskatchewan, Canada.[396] Cawley was considered by the State Department to be a "Principal Author [of] Indo[nesian] Terms,"[397] and his personal ideology and preferences were consequently a source of great concern. Several State Department cables suggest that Cawley was feared to be either a Communist or otherwise embittered against

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[393] According to one State Department analysis, the controversy between Sutowo and Bratanata became "one of the bitterest personal wrangles," in which Bratanata's objection was that "Indonesia would end up with a bunch of smaller firms, unknown quantities, exploring and developing large areas of up to 65,000 square miles which were likely to be far beyond their capabilities" (AmEmb Djakarta, September 13, 1967).

[394] AmEmb Djakarta (March 2, 1963). The contract between Pertamin and Independent Indonesian American Petroleum Company (IIAPCO) was signed on August 18, 1966 (Aden 1988: 307).

[395] For a detailed discussion of the rivalry between these two players and their preferences among petroleum regimes, see Aden (1988: 310-322).

[396] In addition to advising the Indonesians, Cawley had previously worked with the governments of Jamaica, Pakistan, Burma, and Venezuela, pointing to the global scope of advisory work even in the early days of the industry (AmEmb Djakarta, April 24, 1963).

[397] AmEmb Djakarta (May 27, 1963).

the oil companies[398] and (ultimately unsuccessful) efforts were made to recall him to Canada. Beyond Cawley and other private advisors, Indonesian officials also openly sought to learn from officials in other countries. Sutowo reported that he "considered it necessary to meet leaders in Saudi Arabia, Venezuela, Baghdad and Tehran" even as late as 1969 in order to benefit from their expertise and experience.[399]

Concerned over bias in the advice received by the Indonesians and awareness of a general dearth of expertise among all but a handful of Indonesian government officials, the U.S. government response to Indonesia's reform efforts took the form of education.[400] The State Department organized a series of missions whereby Walter Levy, a private oil consultant, was brought to Indonesia to teach oil seminars to government officials, including Sukarno.[401] These seminars not only laid out the structure of the industry, but created an "atmosphere of cordiality"[402] and allowed Levy to point out the likely limits to the Indonesian bargaining position. At the same time, documents suggest that Levy also met with the oil companies and pointed out "injustices" in the draft contracts they offered the Indonesians.[403] He thereby served as a mediator between the parties, guiding the direction of the adjustments. Less than a decade later, sensing tensions over sovereignty that were emerging throughout the region, the U.S.

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[398] AmEmb Djakarta (May 24, 1963).

[399] Sutowo (1972: 11). See also Oon (1986: 43).

[400] These efforts were strongly supported by the companies. Texaco and Standard Oil of California reportedly approached the State Department during the Contract of Work negotiations to request intervention as they were preparing to withdraw (Forrestal, June 10, 1963).

[401] This was particularly the case before IIAPCO's decision to sign a PSA undermined the Majors' negotiating position. Levy was part of Kennedy's representatives for the Tokyo Agreement. See Isaiah Frank to Robert Barnett (March 13, 1963); Howard Jones to Robert Barnett (April 4, 1963), AmEmb Tokyo (May 29, 1963).

[402] AmEmb Tokyo (May 29, 1963).

[403] Forrestal (June 10, 1963).

government would resume its efforts to shape the debate over oil laws by disseminating a Bureau of Mines report on mining laws at the Economic Commission for Asia and the Far East (ECAFE) meetings. To strengthen the message, Northcutt Ely, the author of these studies, presented the results in Manila in 1965 and in Bangkok in 1971.[404]

The development of the PSA, therefore, did not occur in a vacuum. Indonesia created this regime over the course of many years, during which the evolution of its oil regime occurred in a context of power jockeying among government officials, negotiations with the oil companies that shaped Indonesians' understanding of how far they could push their demands, advice from private consultants that could share their experience from other regions, and informational meetings with experts from developed and developing country governments. Although the economic outcomes of the PSA were uncertain, its political implications were clear and deeply internalized at the highest levels of the Indonesian government: Speeches and interviews with Ismael Saleh, who held several Cabinet Secretary positions during this period and would become Attorney General of Indonesia, and Ibnu Sutowo offered a consistent message of asserting sovereignty and control while cooperating and learning from Indonesia's partners.[405]

Following the adoption of the PSA, Indonesia took on an active role in disseminating its new model and experiences. Its earliest efforts concentrated on the Southeast Asian region, which shared similarities in terms of the location of its reserves (offshore, initially in shallow

[404] AmEmb Bangkok (Aug 13, 1971), AmEmb Bangkok (Aug 6, 1971).

[405] See, for example, Sajono to Tahitoe (March 23, 1967), AmEmb Djakarta (May 7, 1963), AmEmb Djakarta (Jan 19, 197), AmEmb Djakarta (July 14, 1972). Machmud, likewise, characterizes the PSAs as an "educational process initiated and forced into the system," a means of introducing transparency, and a way of transforming the host country-IOC relationship from confrontation to cooperation (2000: 60-61).

waters), low sulfur content of its oil, and proximity to markets.[406] One of the earliest adopters of the PSA after Indonesia was Malaysia. Founded in 1963, Malaysia opted to rely on the concession regime in its first oil law, the Petroleum Mining Act of 1966. However, following observation of Indonesian experience and initial steps towards "participation" among the Arab OPEC members (discussed below) followed by the oil shock of 1973, Malaysia passed the Petroleum Development Act in October 1974, switching to the PSA.[407] Malaysia's Minister of Primary Industries at the time stated that "The policy of production sharing […] is, we believe, the most modern and progressive form of contractual relationship between a host government and an oil company ever to be devised to cater for the special problem and condition of developing countries interested in playing a direct and active part in the search for oil and the development of its petroleum industries." He proceeded to thank Pertamina for "helping us to understand the concept, principles, as well as the mechanics of production sharing which forms the rationale for our government's own decision to adopt this system"[408] This statement reflects both an identification with Indonesia's experience as well as the close cooperation that emerged between these governments. [409] During the reform process, Indonesia provided technical assistance to Malaysia, which used it as a model not only for its PSA, but also for its negotiating strategy and implementation.[410] In 1972, Ibnu Sutowo visited Kuala Lumpur, followed by visits

[406] Oon (1986: 188-189) places the formation of the Southeast Asian region – from an oil company standpoint – in the 1960s.

[407] Machmud (2000: 91-92).

[408] Quoted in Machmud (2000: 93).

[409] This cooperation marked a dramatic shift in Indonesia's relationship with Malaysia, which had been one of confrontation under President Sukarno. This policy, which also affected Indonesian relations with Shell Oil Company, was ended by Suharto, who normalized the relationship between countries in 1966.

[410] Lydman (Sept 24, 1973), Lydman (March 23, 1972).

and regular consultations by Malaysian delegations to observe Pertamina.[411] The 1973 law, applied retroactively, was "closely identical" to the Indonesian arrangements.[412]

Similarly, Indonesia hosted Burma's Minister of Mining on a ten-day visit, with State Department officials suggesting that "Indonesia's successful relationship with foreign oil contractors, coupled with Burma's desire to increase its petroleum production, appear likely to influence future Burmese policies."[413] Burma reportedly followed Indonesian oil developments starting in the late 1960s, and in 1973 adopted a service contract that "resembled the Indonesian production-sharing model," with the difference that its initial form relied on profit sharing rather than production sharing. [414] Although companies initially did enter the Burmese market, they eventually withdrew and subsequent rounds were not particularly successful.

While the Indonesian model was a clear example of innovation through learning, its adoption within the region was the result of a complementary combination of learning and emulation. Although not all companies were equally enthusiastic about the system, the PSA came to be regarded as highly effective in maintaining a cooperative atmosphere and encouraging investment.[415] In one report, a State Department official observed that "many oil company executives [were prompted] to observe that if only it were more widely utilized around the world, perhaps there would be fewer confrontations between producing governments and the

[411] AmEmb Jakarta (May 30, 1973).

[412] Lydman (Sept 24, 1973).

[413] AmEmb Jakarta (May 30, 1973).

[414] Oon (1986: 192).

[415] See AmEmb Jakarta (May 30, 1973). This perspective had changed dramatically by the end of the 1980s, primarily due to weaknesses in the administration of the PSA.

companies."[416] The Indonesian model appeared – for a time – so favorable (especially compared to the nationalization alternative) that in 1975 one U.S. Senator proposed adopting the model in the United States.[417] In spite of the emphasis on these advantages, the extent to which adopters seemed to almost uncritically copy the original model would indicate at least some level of emulation. As one oil company representative in Malaysia stated, "Because the directors of the Petroleum Division [in Malaysia] lack experience in the business, they are rigidly adhering to the [Indonesian] Pertamina pattern." [418] Consistent with the expectations of the theoretical framework, which expected PSAs to diffuse to outward-oriented developing countries through both learning and emulation (along with competition), its adoption in Southeast Asia in the 1960s and 1970s appeared to be in large part the result of a combination of both demand-based mechanisms.

4.2 The OPEC Nationalizations

The Indonesian case set a new precedent that would come to alter the contractual relationship between oil companies and host governments throughout the developing world.[419] In the public eye, Indonesia's policies were eclipsed by parallel developments elsewhere in OPEC,

[416] AmEmb Jakarta (May 30, 1973).

[417] In 1974, Senator Bentsen introduced Bill S.3185 "patterned after a production-sharing arrangement first adopted in Indonesia" and by then used in eleven countries (Congressional Record 1974: 7071). See Also Fabrikant (1975: 304).

[418] Lydman (Sept 24, 1973). A similar pattern is found in the Philippines and Bangladesh, combining a very strong element of imitation with slight modifications that would indicate learning. An *Oil and Gas Journal* report from 1978 states that, "Basically, contracts were patterned on the Indonesian production-sharing system but with somewhat better terms" (Auldridge 1978), and another report from 1980 states that, "The production sharing agreements are based on the Indonesian model. However, the Bangladesh government considers certain conditions, e.g. bonuses and terms of payments, negotiable" (Khan 1980).

[419] In Berger's words, "Production Sharing Agreements have come to take over the role of the classic concession agreement" (2003: 1348).

especially among its Arab and Middle Eastern member states. OPEC was founded in 1960 as a coalition of five states: Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela, and added another five members during the 1960s. Most famous for its attempts to influence oil prices and its use of the "oil weapon" in the 1970s, OPEC's early vision was even more far-reaching. In its 1968 "Declaratory Statement of Petroleum Policy in Member Countries," OPEC members made a public commitment to the principle of permanent sovereignty over natural resources,[420] asserting that "this aim can better be achieved if Member Countries are in a position to undertake themselves directly the exploitation of their hydrocarbon resources."[421] Although the declaration left room for various contractual arrangements, it placed special emphasis on the right to government participation.[422] While earlier efforts to establish national control or introduce alternatives to the concession predate this declaration, 1968 was a watershed event in communicating solidarity among the producing states.

The seeds for the Middle Eastern nationalizations[423] were sown in the colonial period, when the major oil concessions were signed. These early concessions were considered unbalanced in favor of the companies and generated tremendous resentment. In an official memorandum from the Iraqi government issued in 1961, the oil companies were described as coming "to an agreement among themselves for monopolizing Iraqi oil and exploiting it under

[420] This principle is laid out in several United Nations Resolutions, notably resolution 1803 (XVII) of 14 December 1962. It asserts that natural resources belong to the people, and establishes the right to nationalize these resources to the public benefit. It has greatly curtailed the ability of home governments to openly coerce host governments in response to petroleum regime changes, and has also played a significant role in investment disputes, limiting them to disputes over compensation rather than the right to change the regime itself.

[421] OPEC (1968: 1183).

[422] OPEC (1968: 1184).

[423] Nationalization, here, is equivalent to adoption of the service contract regime, in that equity participation for the private sector is completely ruled out.

the worst possible terms for the host country and the least possible cost to themselves, without regard to the interests of the people of occupied Iraq."[424] Oil companies were popularly perceived as immoral and as engaging in illegal or questionable business practices to divide or weaken the host countries.[425] Given this moral – rather than strictly economic or legal – dimension to the strained relationship between host countries and companies, governments were under enormous pressure to revise the existing deals. At first, efforts focused on pricing practices along with the share of revenues that would go to the government, but the industry's association with imperialism led to a growing emphasis on asserting sovereignty.[426] One obvious solution was nationalization, which "has been endowed with a symbolic appeal, a mystique, quite unconnected with its possible economic benefits, because to nationalize is to go to the extreme in asserting the political sovereignty of the state over the foreign company."[427]

Nationalization, however, was also perceived as a risky endeavor. The U.S. and British response to the Iranian coup in 1953, which had involved the nationalization of the Anglo-Iranian Oil Company, served as a powerful warning about the possible consequences of moving against the oil industry. The willingness of the Western powers to intervene covertly to overthrow the government and impose a solution favorable to Western companies served as a

[424] Quoted in Hirst (1966: 19-20).

[425] Hirst (1966: 56).

[426] Based on press reports, such as Syrian newspaper *al-Thaurah*, Hirst states that, "So close, in the popular mind, is the relation between oil and imperialism that a government's oil policy is liable to be singled out as the ultimate criterion of its fitness to rule" (1966: 25-26). A speech by Shaikh 'Abd Allah al-Tariki of Saudi Arabia, given in 1967 similarly made the point that "The Arab nation cannot hope to realize its aims of unity, freedom and socialism without the nationalization of the oil industry in the Arab world and the eviction of the oil companies who are the instruments of neo-imperialism (MEES 03/17/1967).

[427] Hirst (1966: 40).

deterrent to many states.[428] Similarly, host countries feared retaliation by the companies themselves. Even before the coup, the companies cooperated in a highly effective boycott of Iran, which reduced production to 10.6 million barrels in 1952, down from 242 million barrels in 1950. The loss of Iranian oil on international markets was immediately made up by Saudi Arabia, Kuwait, and Iraq, insulating the consumer markets. In sum, "the nationalization of Iran's oil industry had brought about political turmoil, near bankruptcy of the national treasury, the replacement of Iranian oil with that of other countries and of its refineries by European ones."[429] Similar responses to Iraq's nationalization efforts strengthened the fear of reprisal.[430]

A turning point came in 1957, when Elf-ERAP entered into a service contract in Iran's National Iranian Oil Company (NIOC), "the first [deal] in which the outside company had no ownership rights."[431] Although the company in this case was not one of the Majors, its willingness to participate in such a deal demonstrated that host countries could adopt a more aggressive position without losing access to technology, capital, and markets. It was followed

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[428] As Parra notes, "Iran suffered a crushing defeat, the lesson of which was not lost on other producing countries in the Middle East (and elsewhere) […] the defeat of Iran was the big stick that threatened anyone who got too far out of line" (2004: 30). A similar point is made by Stevens, who states that Iran "remained a powerful image for governments who might have contemplated a more aggressive route to control of their oil" (2008: 20). Hirst, likewise points out that, while Iraq was highly motivated to nationalize its oil industry as part of its competition with Egypt (which had nationalized its own oil industry and advocated for nationalizations elsewhere), doing so was perceived as too risky given the Iranian example (1966: 40-41).

[429] Kobrin quoting Ghadar (1985: 22).

[430] In a debate about whether or not actions unfavorable to companies in one state could lead to reprisals in the absence of complete agreement among the Arab producing states, both Saudi oil consultant Shaikh 'Abd Allah al-Tariki and Iraqi Oil Minister 'Abd al-'Aziz al-Wattari pointed to Iraq's share of Middle Eastern production as a sign that companies would artificially lower the output of countries as a form of punishment (MEES 04/09/1965). See also Tariki's speech in MEES (03/17/1967), which suggests that the ability to nationalize varied by country and would be impossible in some instances without prior agreements with the Soviet Union, China, Eastern Europe, and other non-Western consumers.

[431] Turner (1983: 65). A MEES headline from 1966 described the deal as "revolutionary," reporting that "For the first time in the Middle East, a foreign oil company has undertaken to act as a mere contractor to the government rather than as a concessionaire or partner" (MEES 09/02/1966).

within a year by a similar deal between Iraq National Oil Company (INOC) and ERAP.[432] Significant as these deals were in proving the viability of the service contract in the region, they did not immediately launch a wave of nationalizations in the region. Over a decade later, OPEC was still laying out a "Blueprint for Participation"[433] with the goal of 51 percent ownership of the concessions.

The most significant country to resist the service contracts-only approach was Saudi Arabia, leader of the "moderate" group of Arab countries. During Yamani's tenure as Oil Minister, Saudi Arabia expressed a strong preference for "participation" over nationalization.[434] His stated reasons were four-fold: First, nationalization within the region would have to be collective in order to avoid punishment.[435] Second, the time period during which nationalization garnered growing attention coincided with an oversupply situation, meaning that nationalization presented a high risk. Third, by destroying the Majors' integrated business model, nationalization would remove the incentive to keep prices high or stable. Fourth, nationalization would result in competition for market share among producers, which would likely lead to price wars detrimental to all.[436] Participation, on the other hand, which would entail partial ownership of the

[432] The Heads of Agreement was announced on 23 November 1967, and reportedly contained terms even more attractive to the host government than the earlier deal (MEES 11/24/1967).

[433] MEES (09/24/1971).

[434] Yamani replaced the more radical minister Abdullah Tariki in 1962, after which disputes with Aramco were more muted than in other Middle Eastern countries, marked by "discussions and negotiations [that] were based much more on technical, engineering, and commercial considerations than gesture politics" (Stevens 2012: 178). Saudi Arabia's relative moderation, according to Stevens, was the result of a less "demanding" colonial relationship that generated less resentment, along with the fact that the Aramco consortium consisted of American, not British or French Companies (178).

[435] Yamani's precise wording is that "it really would be suicidal for any individual country to take such action alone" (MEES 06/13/1969).

[436] MEES (06/13/1969).

Majors' full value chain, would help to stabilize prices and facilitate learning by national companies.[437]

In contrast to the moderate countries, an "extremist" group consisting of Algeria, Iran, Iraq, and – to a lesser extent – Kuwait, advocated full nationalization in pursuit of nationalist and anti-colonial objectives.[438] Those extremists, who existed "on the periphery of the traditional system,"[439] ignored Iranian precedent and took action. In 1971, Algeria nationalized French assets, and was quickly followed by Libya, which nationalized British Petroleum in 1971 and completed the process with the remainder of the sector in 1974.[440] Much like in the Indonesian case, the Libyan nationalization, which was launched just two years after Qaddafi took power in a coup, relied heavily on independents. Whereas in the Indonesian case, change was brought about by attracting new independents into its sector, Qaddafi took advantage of the fact that Libya already had awarded concessions to Majors as well as Independents.[441] Seeking to dramatically raise Libyan oil prices and taxes as well as obtain an initial 51 percent ownership

[437] Yamani repeatedly emphasizes that the goal, above all, was to participate in the downstream, given a goal of price stability. A large share of upstream ownership alone was insufficient; "This would be tantamount to a half nationalization, but why should one stop half way?" Partial ownership, in his view, would produce the same drawbacks as full state ownership (MEES 06/13/1969).

[438] Stevens (2012: 178).

[439] Kobrin (1985: 17).

[440] Although Libya fits the pattern of control-seeking nationalizations that defined the early 1970s, Parra argues that it was in fact "a mere act of misdirected revenge" (2004: 151).

[441] This was unusual for the region. In total, five Majors operated in Libya, along with multiple Independents including the Oasis group and Occidental. Already before Qaddafi seized power, the Independents' vulnerability was apparent. In 1965 the government changed its taxation system over Independents' protests. The conflict was described as the Independents having been "rolled in carpets and all their bones broken" (Adelman 1995: 70). The new government had even more leverage given its superior expertise: according to Adelman, "The new prime minister was a lawyer who had previously worked for Exxon, and the new petroleum minister had an engineering degree and had worked for Oasis" (1995: 71).

stake, Qaddafi's government targeted the smaller companies in a divide-and-rule strategy.[442] Unable to resist the government's demands without threatening their supply chains, Occidental Petroleum – which relied on Libya for 97 percent of its oil production[443] – broke ranks with the large companies over the course of multiple confrontations, demonstrating to Libya and the rest of the region the declining coercive power of the oil companies.[444] Beyond the revolutionary ideology behind the new government,[445] State Department cables suggest that the Libyan decision was strongly influenced by Algeria; Libya was expected to "emulate" Algeria's initial policy of demanding a 51 percent government stake.[446] Likewise, Libyan leaders – encouraged by the Soviet Union – "professed admiration" for Algeria[447] to such an extent as to ignore their need to compete with Algeria for market share.[448] At one point, a State Department official spoke of a "departure from logic" of the Libyan regime in its approach towards petroleum

[442] In addition to its strategy, Libya was helped by the U.S. State Department. Adelman reports that James Akins, head of the Office of Fuels and Energy testified that Libyan demands were "reasonable" and appeared to encourage the companies towards appeasement (1995: 75-76).

[443]In comparison, Amoseas and Esso Libya relied on Libya for only 3 and 5 percent of their oil, respectively (Vandevalle 1998: 75).

[444] Occidental's Libyan subsidiary (Oxylibya), for example, was the first oil company to concede to the government's new pricing policies and gave in to Libya's 51 percent ownership stake demand within four months after the government blocked shipping and production, even signing a new deal shortly thereafter (Fisher, Golbert, and Maghame 1975: 76-77).

[445] According to Fisher, Golbert, and Maghame, the leaders benefited both politically and economically from nationalization, winning "public support, mobilization of masses, and curtailment of foreign domination" along with higher taxes and prices (1975: 91).

[446] INR/Economic Intelligence Note (Oct 13, 1971). Other analysts echo this sentiment: Adelman argued that the Libyans "tap[ped] into eight years' Algerian experience" in order to achieve their goals of increased revenue and control (1995: 71).

[447] See Montague and Melone (April 22, 1970). Other cables describe Libyan "fascination" with Algeria's national oil company joint ventures (AmEmb Tripoli, April 20, 1970).

[448] As one memo suggests, Libyan policies of cooperation with Algeria were economically detrimental, but "Market competition between Libyan and Algerian hydrocarbons may be abscured [sic] temporarily by revolutionary fervor and common nationalist spirit to descomfiture [sic] of foreign operators in Libya." (AmEmb Tripoli, April 20, 1970) This assessment was echoed in a later memo where it was pointed out that policy coordination continued in spite of failures of the countries' joint venture (AmEmb Tripoli, June 2, 1971).

policy.[449] The decision to pursue policies that arguably undermined the country's economic interests points to a tendency towards a logic of appropriateness rather than consequences. The remaining "extremists" quickly followed. Iraq initiated nationalization in 1971-72, while Iran withdrew from participation negotiations on the grounds that it had already acquired ownership in 1951.

In short order, the Libyan nationalization would replace Iran as the new model for policy change in the region.[450] Not only was the Libyan success highly publicized, but many policy-makers in developing countries (unlike their private sector counterparts) had not themselves witnessed the Iranian coup.[451] Its "success" escalated pressure on moderates to raise their demands, feeding nationalist sentiments throughout the region. Although the remaining Arab Gulf producers, consisting of Abu Dhabi, Kuwait, Qatar, and Saudi Arabia, came to a participation agreement in 1972,[452] when Kuwait chose to raise its equity stake to 100 percent, a political "bidding war" emerged.[453] Writing of Saudi Oil Minister Yamani's motivations, State Department analysts stated that, "If one major producing country should begin to nationalize, Yamani feels [that] pressure to nationalize among other major producing countries [will] likely

[449] According to this memo, "Jallud said that comparisons between Gulf and LARG are not valid. Latter is revolutionary country and unlike Gulf states does not repeat not need petroleum income (This apparent departure from logic is probably repetition of idea Qadhafi has voiced: that Libya did without oil income once and could again" (AmEmb Tripoli, Jan 29, 1973).

[450] As one contemporary publication noted, the participation negotiations appeared to have significant benefits to the host country and was likely to serve as an inspiration to others. Specifically, "Participation may indicate to other countries with extractive industries dominated by foreign concessionaires how to obtain control over their natural resources without driving off much-needed capital, technical know-how and marketing ability, and without straining political and economic relations with the consuming countries which are the major customers for their products and the potential investors in their national economies." (Note 1973: 775).

[451] AmEmb Tripoli (Dec 5, 1970).

[452] Kobrin (1985: 25-26).

[453] Stevens (2012: 181).

become irresistible."[454] He reportedly believed that a failure to achieve similar levels of equity participation would "severely" damage Saudi Arabia's "international prestige and its prospects for internal stability."[455] In large part, this was the result of public exhortations among radical states to abandon participation in favor of nationalization.[456] Whereas the Iranian example suggested that strong demands for nationalization would lead to government overthrow, governments' new fear was that the tide of nationalism had risen to such an extent that failing to act on public sentiment could reach a similar outcome. A logic of appropriateness came to dominate over a logic of consequences, pointing to a process of emulation over diffusion.

The push towards diffusion[457] was facilitated by the formation of OPEC. Although some level of government information exchange existed prior to OPEC's founding,[458]the organization

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[454] AmEmb Jidda (Aug 9, 1971)

[455] AmEmb Jidda (Feb 17, 1972). Similar observations were made about Kuwait, whereby, "Conservative governments like Kuwait cannot afford to lag behind more militant ones and GOK has already shown that it is sensitive to opposition criticism on oil matters." (AmEmb Kuwait, Aug 8, 1971). In the case of Kuwait, there also appears to be some question of whether the government had the ability to internalize the lessons of other countries. Writing on Kuwait's response to the Iraqi settlement, "Ralston (protect) said only few Kuwaitis really understood aaw [sic] points of agreement and he believes companies have responsibilitr [sic] carefully and partiently [sic] explain what involved." (AmEmb Kuwait, March 6, 1973).

Secondary sources support this perspective, suggesting that "National control over oil resources had become a prerequisite for political respectability in the Arab world" at the same time as revenues themselves became relatively less important (Note 1973: 787). It should be noted, however, that at the time, Saudi Arabia and many other countries in the region actively sought to avoid complete nationalization as interfering with their development (788).

[456] Saddam Husain, then Vice President of Iraq's Revolutionary Command Council, for example, used an interview with a Kuwaiti newspaper to "urge[] the Arab states to nationalize their oil operations rather than opt for any participation formula," along with high-level coordination on investment. To support his position, he argued that "There are no negative aspects in the Iraqi experience" (MEES 03/08/1974).

[457] Although it may be argued that the change in regime was strictly the result of increasing willingness and ability to intervene in this region, the position taken here, which is that the capabilities to learn and models to emulate had to develop as well, is also echoed by other authors. See, for example, Maull (1981: 278). It should also be noted that diffusion of some sort was virtually inevitable within the region, as Saudi Oil Minister Yamani noted when he stated that "throughout the history of government-company relationships in the Middle East the principle of the most favored nation treatment has been readily applicable whether a clause explicitly providing for it existed in the Agreements or not. Whenever one country in the area succeeded in acquiring a new benefit from the relevant oil companies it was only a matter of time before the other countries negotiated and obtained the same or equivalent benefits" (1976: 392). Although this didn't necessarily mean that the service contract model itself was certain to

institutionalized cooperation and communication among the world's major developing country oil producers. [459] Countries consulted with each other about their negotiating experience,[460] cooperated in setting negotiating goals, and even worked together to mimic oil company strategies.[461] Smaller groupings formed as well, supplementing this approach. For instance, the Libya-Algeria-Iraq group – with limited participation by the United Arab Republic – cooperated to form a "united front," exchange data, and create a mutual "support fund,"[462] thereby pushing the OPEC group as a whole towards a more confrontational negotiating stance. The moderate countries attempted to reduce the influence of these extremists by founding the Organization of Arab Petroleum Exporting Countries (OAPEC), which sought to avoid the politicization of oil policy in favor of a more technical approach, albeit less successfully.[463]

The OPEC nationalizations would foment petroleum regime change throughout the developing world, both by virtue of its initial successes, but also by "demonstrating the disunity

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spread within the region, governments were highly attentive to any changes among their neighbors. Yamani notably credits OPEC as the enabler of participation (1976: 393).

[458] Turner offers several examples in Latin America whereby governments closely studied each others' laws and experiences when undertaking reform, and even reached out to other states across the world to share their experiences (1983: 96).

[459] Although OPEC increased the level of information shared between countries, some experts assert that Middle Eastern governments continued to be "ill informed" as late as the 1970s (Marcel 2006: 33).

[460] This government-driven process was, in many ways, reinforced by the companies themselves, who insisted on negotiating a new agreement with all OPEC states as a group rather than individually in order to avoid leapfrogging. The wisdom of this position was challenged by Yamani (AmEmb Rome, Sept 23, 1972).

[461] This point is made by Smith and Dzienkowski, who state that "OPEC facilitated the sharing of information among its members, and thus, as some members entered into newer agreements with terms more favorable to the host country, other members were able to use their knowledge of these agreements as further leverage to complain about the original concessions (1989: 31). Fabrikant adds that, "With the formation of OPEC in 1960, these countries, following the examples of the companies, have come to the conference table flanked by lawyers and other experts" (1973: 104).

[462] See Brown and Rives (June 18, 1971). The importance of the united front among the Mediterranean oil producers is emphasized by secondary sources (see, in particular, Note 1973: 785).

[463] Fatouros (1968: 964).

of the North."[464] As with OPEC and Indonesia, policy change in these countries was the result of a choice – driven by domestic demands and interests – rather than external pressure or foreign imposition. Few countries would ultimately choose the path of OPEC, opting predominantly in favor of the PSA. This difference is – as outlined in Chapter 2 – most likely attributable to differences in regime type. The Arab OPEC experience demonstrates a strong push towards diffusion by emulation among an early-mover group of radical or inward-oriented countries, with political momentum overtaking even the more moderate countries within the region. This produced a more confrontational approach towards the oil companies, culminating in "participation" and eventually nationalization.

4.3 Russia: From Learning to Emulation

A strong divergence between expert advice and policy choices is one of the clearest ways to differentiate between learning and emulation. The evolution of Russia's oil regime in the post-Soviet period represents a case in which policies respond to different mechanisms over time, shifting from an early emphasis on learning to one relying on emulation. Whereas Russia's initial approach favored a policy that was pushed by international consultants, oil companies, and home governments as the only regime that could guarantee sufficient investment to meet its needs, Russia eventually reversed this policy. In this case, self-perception – coupled with self-interested political pressure from domestic industry players – pointed towards a petroleum regime that was expected to result in sharp declines in foreign investment. Russia thus demonstrates the significance of both mechanisms of diffusion and the ways that a government's orientation –

[464] Rodman (1988: 318).

whether inward- or outward-oriented – can strengthen or weaken the influence of particular mechanisms.

The Russian oil industry is one of the world's oldest, and was initially the recipient of significant foreign investment.[465] It was nationalized under the Soviet government not long after the Russian revolution.[466] The combination of major discoveries in Russia's east and higher levels of investments to spur hard currency exports allowed the Soviet Union to become the world's largest oil producer by the late 1980s.[467] After the fall of the Soviet Union, Russia found itself with a massive petroleum industry dominated by the state. Although the Soviet government had been in negotiations with Chevron to implement a PSA in what is now Kazakhstan[468] and had pursued several joint ventures,[469] the system in place was effectively a service contract regime, with state-owned corporations holding monopolies throughout the value chain. Russia's production levels soon fell in the face of economic collapse, a steep drop in domestic demand, inefficiencies, waste, and lack of capital. In order to ease its decline and respond to pressure from

[465] By some accounts, the first oil well in Baku predates the first American oil well by over a decade. While part of modern Azerbaijan, Baku was then part of the Russian Empire. Early Russian oil development took place under mineral legislation and "Instruction about the oil industry" issued in 1839 (Svendsen and Kompaniets 2015: 307-308, 317).

[466] Nationalization took place through Soviet Government Decree about land on 26 October, 1917, followed by the Decree about subsoil of land of 30 April 1920 and the Mineral Act of the Russian Soviet Federative Socialist Republic in 1920 (Svendsen and Kompaniets 2015: 318).

[467] Svendsen and Kompaniets (2015: 310). The Russian oil industry did not only serve to generate revenues for the state, but also was a means of building and maintaining influence within its empire in Eastern Europe. However, in the post-Stalin era, differences between the cost of Soviet oil to its periphery relative to global oil prices grew, resulting in substantial subsidies to Eastern Europe that proved an enormous drain on the Soviet Union (2009: 15-17, 21-22).

[468] OGJ (8/5/1991).

[469] The PSAs were directly negotiated between the state and the Supermajors, falling outside of the prevailing oil and gas framework. Because of the centralization of power in the Soviet state, the fact that no special laws were in place to allow for PSA use was not considered a significant barrier, as it was to become in the post-Soviet states (Nelson 1996).

international lending institutions, Russia began to court private investment in its energy sector. Along with limited privatization, the early 1990s saw the drafting and adoption of a number of new laws to reform the fiscal regime, including but not limited to: the Subsoil Law (1992),[470] the Federal Continental Shelf Law (1995), and the Federal Production Sharing Agreement Law (1995). The Subsoil Law specified a licensing/concession system, whereas the PSA law created a contractual alternative that operated in parallel to the concession system and was aimed primarily at foreign investors.[471]

These changes occurred with substantial international involvement. Russia received advisory support from the University of Houston Law Center, backed by U.S. oil companies and under direction of George W. Hardy III (and supported by the VNIIKTEP Institute), for two years. It was later supported by the World Bank, which also assisted with legal drafting. External advice also came from Europe, through oil companies as well as from the European Bank for Reconstruction and Development (EBRD), which focused on environmental legislation. Similarly, a workshop organized in 1992 by the European Community for the Russian Ministry of Fuel and Energy sought input from the University of Dundee and the University of Leiden. Although there were some differences between these groups – the Houston group emphasized

[470] The Law on Underground Resources, which, though designed to serve as a comprehensive investment framework, left a number of significant issues, such as taxation, unresolved (OGJ 8/2/1993). This law was not without controversy: during the drafting process, two conflicting versions – one prepared by the Russian Committee for Geology and the other by the Ministry of Fuel and Energy – were submitted to the Supreme Soviet, creating conflicts during the reconciliation process (Konoplyanik 1994: 190).

[471] See Nelson (1996) and Krysiek (2007: 2). Russia passed a PSA law in 1995, but that law was criticized as lacking essential features found in PSA laws in other countries, notably the ability to maintain PSAs as self-contained agreements (Stoleson 1997: 673).

the idea of a "detailed, specific, all-embracing oil and gas law"[472] while European advisors reportedly advocated in favor of an *ad hoc* solution comprising a framework law coupled with evolving contracts[473] – both sets of advisors ultimately advocated for a legal regime that would facilitate foreign investment. Russian experts at the VNIIOENG Institute, on the other hand, preferred a "Russian solution" that reflected the country's unique situation and would be less focused on foreign investors.[474] Together, these initiatives generated three draft laws "On Oil and Gas" – the one developed by the Houston Group (the Gazeev-Hardy version), another promoted by the VNIIOENG Institute (the Tishchenko version), and a final version supported by the Ministry of Gas Industry. [475] The three versions were presented to the Ministry of Fuel and Energy, other government organizations, as well as independent experts "at conferences and workshops including international forums." Eventually, a compromise or trade-off version that incorporated the PSA option was developed by a special commission (the Perchik version). [476]

The movement towards a PSA structure was strongly supported by international investors. Although several projects went forward without a comprehensive PSA framework, many international oil companies made it clear to Russian legislators that a PSA with strong

[472] This fixation was considered highly problematic in some quarters, creating conditions for disappointment and conflict. Rather than look to "difficult" or "starter" countries, the Houston approach took Texas as its legal model, assuming that detailed legislation could be absorbed into the Russian culture. In contrast, an approach based on individual deals managed on a contractual basis and facilitated by "A short law of empowerment combined with gradually evolving model agreements has proved to be a way to success in probably most of the countries which have achieved major growth in oil and gas production around the world" (Wälde 1994: 238).

[473] Wälde (1994: 238-239).

[474] Wälde (1994: 239).

[475] The Gazeev-Hardy Draft was designed primarily as a supplement to the Subsoil law, and would create a regulatory body. The Tishchenko draft, in contrast, placed greater emphasis on state participation, while the Gas Ministry draft only considered the natural gas sector. The Perchik version appeared to give negotiation authority to the regions (Wakefield 1997: 159-160). See also Konoplyanik (1994: 190; 1993), OGJ (1/20/1992), Nelson (1996) and Wälde (1994: 235-236).

[476] Konoplyanik (1994: 190).

protections would be a prerequisite to making significant investments.[477] The international oil companies formed a lobbying group, the Petroleum Advisory Forum, as early as 1993 to push forward the debate on PSAs, and even gained some support among domestic oil companies and equipment manufacturers.[478] Industry experts likewise suggested that "PSAs seemed ideally designed to tackle the problems that faced Russia's subsoil economy."[479] Still in transition, Russia's legal system was marked by instability, a severe deterrent for projects with 30-50 year time horizons. PSAs' self-contained nature therefore appeared to make them a rational policy for Russia.[480]

Beyond the sheer number of foreign proposals and lobbying efforts, external influence was magnified by "the prospect of a large World Bank energy loan project and its conditionalities"[481] along with a "dearth of lawyers" on the Russian side.[482] As a result, foreign advisors, though "politically often quite naïve,"[483] benefited from strong support among Russia's outward-oriented Westernizers, who were ascendant in the early Yeltsin years. Their influence led to the PSA law, signed on December 30, 1996. This law was "in many respects [similar] to

[477] This is a recurring theme in reporting on Russia: industry publications consistently highlight the importance of the PSA as long as Russia's legal system remains unstable For examples, see Pugliaresi and Hensel (1996), Lorenzetti (2003), Fletcher (2002), and OGJ (10/18/1999; 3/6/2000).

[478] Chaisty (2007: 306-307).

[479] Chaisty (2007: 304).

[480] As one scholar argues, however, this did not make the PSA uncontroversial within Russia: "then-left-wing Duma […] accused the government of selling the country's mineral endowment to foreigners at fire sale prices" and describes PSA legislation as "one of the most liberal investment concepts in use today" (2002: 367).

[481] Wälde (1994: 235).

[482] The Russian oil industry had historically been managed by engineers rather than legal experts (Wälde 1994: 236).

[483] Wälde (1994: 236-237).

other international contracts:"[484] It incorporated common structures with respect to royalties, profit sharing, and signature bonuses, while maintaining flexibility to negotiate specific terms on a case-by-case basis in order to accommodate the diversity and challenges of Russia's geology. At the same time, it was criticized as being "vague and rambling" and "severely watered down," giving the government substantial latitude to renegotiate terms based on changing circumstances.[485] Nevertheless, the eventual adoption of a PSA regime appeared in many ways to be a strong instance of learning, particularly as it had not been seriously considered even "as recently as 2-3 years" before its adoption.[486] It was selected over the resistance of Russian nationalists and communists who preferred a closed system,[487] and in spite of power struggles across the federal and sub-state levels of government.[488]

While the outward-oriented Westernizers succeeded in passing the PSA law, this initial success gave way to disillusionment as reality fell short of unrealistic expectations.[489] Over the course of Putin's Presidency, Russia began a gradual process of abandoning the PSA, coinciding

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[484] Konoplyanik (1993). See also Stoleson, who states that the Russian PSA is "modeled after successful PSA laws enacted in countries around the world," although it falls short in some dimensions (1997: 672-673). In the words of one participant in the Houston group, "The fundamental purpose of the academic, governmental, and industry participants was to recommend to their Russian counterparts involved in the UH Project a legislative framework based on current international practices in the oil and gas industry. Those who were involved recognized that this would require both educational and creative efforts in order to demonstrate the advantage of opening up the old Soviet system and replacing it with a more flexible system that could attract foreign investment" (Skelton 1993: 464).

[485] Wakefield (1997: 161).

[486] Nelson (1996). Although PSAs were under discussion during the Soviet period, they were poorly understood by officials. Ernst & Young country managing partner in Moscow, George Reese, reportedly said that, "Something the West is going to have to cognizant [sic] of is that when you're talking to a typical Soviet about a production sharing contract … you can't be sure all Soviets really grasp what that means." (OGJ 8/5/1991).

[487] Wälde (1994: 236).

[488] Wälde (1994: 241).

[489] Westernizers in the oil industry were commonly young academic researchers who "have been made to believe … that simple adoption of Western models … would generate a dramatic upturn of the Russian economy within a very short time-span." (Wälde 1994: 236-237).

with a more inward- and state-oriented approach towards natural resource development. In 2003, Russia passed a law limiting fields eligible for PSAs and began to use regulatory measures to challenge several prominent existing projects, leading one expert to conclude that "PSAs were no longer a viable method of foreign investment in Russian oil and gas."[490] Although PSAs are formally still permitted and the existing PSAs continue to operate, Russia has largely switched to a concession system. This regime shift was partly the result of pressures from domestic oil companies and problems with existing PSAs,[491] but more importantly was a result of emulation. Because Russia did not perceive itself as a developing country, the idea of using a petroleum regime created by and for developing countries appeared inappropriate.

Although some Russian companies embraced the PSA concept,[492] a large segment of Russia's domestic industry – which, uninvolved in the mega-projects covered by PSAs, largely operated under the parallel concession system[493] – resisted the shift towards a PSA regime. In large part this resistance was an effort to stifle competition: Not only do PSAs facilitate the entry of foreign oil companies, but their relative transparency in Russia could, in fact, be problematic

[490] Krysiek (2007: 3).

[491] These problems stem primarily from dramatic cost overruns and delays in Far Eastern projects. Because governments receive a split only of profit oil, cost increases tend to reduce governments' initial share of revenues, generating substantial tension. Similar dramatic cases have arisen in other countries, notably Kazakhstan. PSAs in Russia face additional challenges that stem from compromises made during the drafting of the PSA law that made them relatively unattractive to many investors (Timokhov 2002). For a detailed discussion of the compromises made in one version of the law and the ways in which it fell short of both investor and government preferences, see Skelton (1993).

[492] Timokhov suggests that Russian companies operating outside of Russia have gained an appreciation for the PSA as an "effective investment vehicle" (2002: 368).

[493] According to Konoplyanik (2002), "Russian companies currently carry out 100% of their production in the state under the terms of the license system. […] the PSA regime has for Russian companies only a prospective meaning and is not as vital to them as for the foreign companies."

to many companies.[494] Thus, domestic producers sought to avoid the expansion of PSAs to their own operations, and to prevent additional projects with foreign sponsors from proceeding.[495] This industry perspective, which self-interestedly concluded that "a PSA regime is altogether unnecessary for Russia"[496] created an incentive for the Russian government to reevaluate its petroleum regime.

With this encouragement and strong views about Russia's rightful place in the world, the stage was set for a shift in Russia's oil regime based on a combination of domestic pressure and emulation. In choosing which model to imitate, Russia's government rejected the view of itself as a "developing country,"[497] which stands in direct tension with Russia's self-perception as a great power.[498] As Russia has – against international industry advice – shifted away from the PSA, its rhetoric has emphasized that its concession system is "[i]nspired by practice in Western countries" [499] and is consistent with developed country practices. Such a position strongly supports a logic of appropriateness over one of consequences, suggesting that Russia's current

[494] See Konoplyanik (2002), who states that "while the Russian companies were transforming a significant part of their revenues into net profit using loopholes in the legislation (in other words, acting legally but in "gray areas"), they were not interested in the development of mechanisms for expediting investment that called for the elimination of such loopholes or that envisaged only "clean" entrepreneurial activity."

[495] OGJ (3/10/2003).

[496] OGJ (3/10/2003).

[497] Interestingly, as one expert working on the Houston Law Center team reported, during initial reform talks, Russian counterparts more frequently pointed to the historical burdens of the term "concession," against which the Soviet nationalization had been directed (Skelton 1993: 471).

[498] In one interview, a petroleum consultant related an incident where one advisor sought to persuade a Russian client to look to a West African country for inspiration for part of their law. This suggestion was immediately and forcefully rejected (IGO specialist, November 13, 2014). See also Snieckus (2001), where the author observes that, "For on some psychological level it will remain difficult for the former Soviet Union to embrace a production agreement traditionally associated with "developing" nations – a bitter pill to swallow for a country which, through most of the last century, advanced its particular industrial vision free from foreign commercial influence."

[499] Locatelli and Rossiaud (2011: 8) point to the Western inspiration of Russia's tax structure, but also question the effectiveness of this method in light of Russia's weak institutional environment.

oil regime is strongly driven by emulation of Western Europe (and perhaps the United States) and its self-perception as a developed country.

4.4 Mexican Reform

One of the most high-profile energy reforms of the past decade[500] took place in Mexico. The response to a rapidly deteriorating petroleum sector and elite political consensus on the need for change, the shift in Mexico's petroleum regime culminated in the launch of "Round One" of licensing in 2015. This marks the most significant opening of the Mexican oil sector since the country's decision to end private participation in 1938.[501] Multiple changes to the constitution as well as enabling laws were required for the adoption of concession-like structures and the PSA (alongside the service contract system). The process of reform and the choice of regime demonstrate strong evidence of learning, which was aimed not only at attracting foreign investment, but also to obviate the need for additional controversial legislative changes.

Mexico counts among the most famous nationalizations in industry history.[502] The second-largest producer in the world in the 1920s, Mexican oil production had been on the decline and the sector had been experiencing significant labor tension. The expropriation decree, promulgated on March 18, 1938, targeted major U.S. nationals, which responded with an

[500] According to one observer, "It is not an exaggeration to call Mexico's energy reform revolutionary" (Manatt Jones Global Strategies 2015: 3).

[501] An extensive literature exists covering the causes and consequences of the Mexican oil nationalization, including Brown and Knight (1992), Philip (1982: 201-227), Mommer (2002: 65-84), Haber, Maurer, and Razo (2003). The petroleum legal system in post-1970 Mexico has obtained significantly less attention, with the notable exception of González in McHarg (2010: 210-222) and Miranda (2009: 206-218). On the other hand, with the growing interest in national oil companies, several studies have focused on the operational efficiency and reforms of PEMEX. See, for example, Stojanovski (2008) and Shields (2006).

[502] Kobrin describes the Mexican case as an inhibitor to nationalization in other countries, demonstrating "that although nationalization may be feasible, it entailed very significant costs in terms of isolation from the international industry dominated by the major companies" (1985: 20-21).

embargo. The U.S. government, however, offered relatively little resistance apart from insisting on standards for prompt, adequate, and effective compensation for expropriated assets, in large part owing to the fear that antagonizing the Mexican government might drive it towards the Axis powers at a time of rising geopolitical tensions.[503] Even apart from compensation negotiations, the nationalization process was drawn-out: a revision of the Constitution in 1940 prohibited hydrocarbons concessions or contracts, although risk contracts continued to be used until 1958, when changes to the Regulatory Acts established Petróleos Mexicanos – or PEMEX – as the "sole agent for the Mexican government's exploitation of Mexican oil." [504] Mexico's commitment to maintaining the service contract model was apparent in Annex 602.3 of the North American Free Trade Agreement, in which Mexico was exempted from provisions relating to investment and provision of services in the oil and gas sector.[505] Decades of state ownership of the country's oil has had economic, political, and social repercussions: PEMEX was used as a "cash cow" by Mexico's ruling party,[506] the Institutional Revolutionary Party (PRI), to run an extensive system of patronage that allowed it to maintain a hold on power for six decades. Even as Mexico is one of the most economically diversified countries in Latin America, it has a surprisingly high fiscal dependency, eclipsed only by Venezuela and Ecuador.[507] Beyond its

[503] Office of the Historian, State Department (n.d.). Although offering some support to the companies initially, the government pressured the American companies into a settlement for $29 million in 1942. In contrast, the British, which did not participate in the settlement, received $130 million in 1947.

[504] Miranda (2009: 215); McHarg (2010: 215); Samples and Vittor (2012: 224).

[505] As noted in Hufbauer and Schott (2005: 417-418) and in Philip (1999: 46), NAFTA did result in some liberalization in the petroleum sector, as it enabled greater foreign participation in PEMEX procurement, allowing PEMEX to draw on the expertise of oil services companies for complex projects, such as deepwater drilling and enhanced oil recovery.

[506] For many years, PEMEX's net income has been negative owing to an enormous tax burden (Stojanovski 2008; Vietor and Sheldahl-Thomason 2017: 2), which has prevented it from investing adequately in the upstream.

[507] Monaldi (2017: 18).

material significance, state ownership of the industry has also become part of Mexico's national identity.[508]

In spite of these barriers to energy reform, the need for change was widely recognized. By 2012, when the reform process began in earnest, the country's production and proved reserves were already in severe decline: Owing in large part to depletion of its major oil fields, by 2015 Mexican production of crude oil had fallen 27 percent from its peak of 3.4 million barrels per day in 2004.[509] Similarly, underinvestment in exploration had resulted in reserve replacement rates that frequently fell below 100 percent, resulting in an overall decline in proved reserves. Although significant resources are believed to exist in Mexico's deepwater portion of the Gulf of Mexico and in the form of unconventional oil, "PEMEX does not have the expertise, technological or financial capacity to exploit" these resources.[510] Recognizing these growing problems, several Presidents attempted to introduce some form of private participation in the upstream segment. In 2008, for example, President Felipe Calderón of the National Action Party (PAN) attempted to ease legal constraints on PEMEX. This included a reform of PEMEX's governance structure and contracting mechanisms, allowing it to execute contracts with private

[508] Enrique Krause, for instance, describes oil as Mexico's "secular theology" (2013), while Doherty states that "the reforms also implicate important questions about national identity, as inalienable sovereignty over strategic resources has been one of the defining pillars of the modern Mexican state" (2015: 246). One consulting firm stated that "The opening of the E&P sector to unrestricted private investment through risk contracts was inconceivable just a few years ago. Resource nationalism, especially when it comes to oil, has played a key role in Mexico's political psyche for decades; so much so that up until now it has been enshrined in article 27 of the Constitution […] touching the article had become taboo" (Manatt Jones Global Strategies 2015: 4). A recent Harvard Business School case study described state ownership as "being of "quasi-religious significance" to the Mexican people" (Vietor and Sheldahl-Thomason 2017: 2). Thus, not only is PEMEX a "cash cow" but a "sacred cow" (Samples and Vittor 2012: 216).

[509] EIA (2015). At the time reforms were initiated in 2012, production had already dropped approximately 20 percent to 2.55 (Wood 2012: 7).

[510] See Alpizar-Castro and Rodriguez-Monroy (2016: 727). Similar conclusions can be found in Wood (2012: 8).

individuals and firms on a cash compensation basis, in addition to which it could offer cash performance incentives. Risk-based remuneration remained prohibited, as did contracts involving "sharing production or contracts comprising percentages of production or the value of sales of hydrocarbons or their derivatives."[511] The changes, which were all that could be approved over opposition from the PRI and Party of the Democratic Revolution (PRD),[512] produced "controversy and political unrest" with only "muted" effects on the oil sector.[513] The disappointing results made "clear to legal experts that changes at less than the constitutional level would not be sufficient to meet Mexico's challenges."[514]

With production and reserves continuing their decline – even as PEMEX increased its investment – and new reserves located in increasingly challenging geological formations, far-reaching changes were finally undertaken. In a "Nixon Goes to China" moment, the PRI led by President Enrique Peña Nieto, the party responsible for the original nationalization, led the legislative effort to end PEMEX's monopoly, forming a "Pact for Mexico" with the PAN and the leftist PRD.[515] Beyond the performance issues plaguing the energy sector, several other factors helped to create a window for reform. First, Calderón's PEMEX reforms – along with a political corruption scandal and criminal activities by union leaders – greatly weakened the power of the oil workers' union (STPRM), undermining their ability to prevent additional reforms.[516] Second,

[511] McHarg (2010: 216).

[512] Monaldi (2017: 19).

[513] Samples and Vittor (2012: 224).

[514] Goldwyn (2013: 8).

[515] See Goldwyn (2013: 8) and Seelke et al. (2015: 3). The constitutional reforms led the PRD to leave the Pact, but reforms were able to continue. Even so, leftist parties and public opinion have largely opposed the reforms (Monaldi 2017: 20).

[516] Vietor and Sheldahl-Thomason (2017: 2).

heavy borrowing by PEMEX coupled with low oil prices and significant losses added to the perception that private capital would be needed. Years of PEMEX corruption scandals further undermined confidence in its ability to improve efficiency without external involvement.[517] Thus, the reforms sought to improve efficiency, output, and transparency. With these shared objectives and pressures for improving the energy sector, the Mexican Congress ratified amendments pertaining to Articles 25, 27, and 28 of the constitution in December 2013. Secondary legislation in the form of nine new laws and twelve modifications to existing laws was "drafted and introduced to Mexico's Congress in April 2014, and was signed into law just 4 months later."[518] The combination of constitutional reform and the creation of new regulators and other veto points decrease the likelihood that these changes will be reversed.[519]

Each of the political parties entered the reforms with different petroleum regime preferences. According to Ibarra-Yunez, the PRI and PAN leaned towards PSAs along with "various types of private contracts," whereas the PRD, driven by ideological opposition to private participation, favored service contracts, albeit with a divide among those willing to consider profit risk sharing contracts and those wanting to maintain the status quo.[520] These options varied in attractiveness to the private sector but all groups agreed on continued state ownership of the subsoil reserves.[521] Reflecting these divisions, the legislative reforms

[517] Vietor and Sheldahl-Thomason (2017: 3).

[518] Vietor and Sheldahl-Thomason (2017: 4).

[519] This is particularly the case given political party fragmentation and division of powers (Monaldi 2017: 19-20).

[520] Ibarra-Yunez (2014: 7).

[521] According to Goldwyn, "The purpose of the reform is to attract large-scale private capital to spread risk and maximize government revenues, not government ownership" (2013: 9). Other objectives are believed have included increasing domestic energy supplies, achieving international standards and best practices, fighting corruption, increasing national savings through the establishment of a Petroleum Fund, protecting the environment, supporting

maximized government flexibility and made possible all three petroleum regimes. They enabled service contracts, profit-sharing contracts, production sharing contracts, and licenses.[522] These are perceived to be "standard contracts used by the international oil industry, which allow for the booking of reserves."[523]

Although the contracts may be "standard," their choice was the result of careful consideration of the experience of other countries. In particular, most observers point to the importance of Brazil and Colombia as models for Mexican fiscal reform, with Norway serving as inspiration for its oil fund.[524] While the precise lessons used by the government's legal drafters are unknown, there exists a strong industry consensus about the takeaways from the two Latin American cases that likely influenced the Mexican regime choice.

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economic and social development, and minimizing risks in oil and gas extraction (Alpizar-Castro and Rodriguez-Monroy (2016: 278-729).

[522] Although functionally the same as concessions, the term "license" is both more politically acceptable and side-steps the question of ownership of the subsoil, which according to the constitution continues to remains with the state (Manatt Jones Global Strategies 2015: 6; Lajous 2014: 17). Other significant changes include restructuring of PEMEX, the creation of new regulatory agencies, and the development of a Mexican Petroleum Fund.

[523] Lajous (2014: 17).

[524] Vietor and Sheldahl-Thomason state that Mexico's "government drew upon global best practices, such as the US' Department of the Interior's work on bidding and Norway's management of its oil fund" (2017: 4), while Ibarra-Yunez suggests that Mexico looked specifically at three models: "Petrobras, mainly for the deep reforms in its fiscal regime and the promotion of the company as a world-class technological leader in deepwater exploration and the original use of its revenues for technological growth; Colombian Ecopetrol, for the clever pragmatic shift from a sole state-run monopoly with a strong union toward an international oil company that maintains a strong union … and Norway's Statoil, for its reform and fiscal treatment and leadership as an IOC and organization structure after the 1900s, with a leading fiscal regime and reserve fund" (2014: 9). For further analyses of the role of other countries, see Alpizar-Castro and Rodriguez-Monroy (2016: 733). Goldwyn further notes that, not only do Colombia and Brazil serve as role models to Mexico, they are also Mexico's major competitors for foreign investment, noting that "That combination of political will and actual legal reform will put Mexico in the pole position for attracting energy investment, providing stiff competition for Colombia and Brazil, in particular" (2013: 21).

The Brazilian case, discussed in greater detail in the following chapter, served both as a positive example and a cautionary tale.[525] Brazil opened up its oil sector in 1995, by means of a constitutional amendment and the "Concessions Law" (Law 8.987), followed by an additional "Petroleum Law" (Law 9.478) in 1997. These changes took place in a context of widespread resource nationalism, but were enabled by recent memories of economic crisis.[526] The reforms collectively dissolved the upstream monopoly held by Brazil's national oil company, Petrobras. At the time, Brazil adopted the concession regime, awarded through a transparent process managed by a newly created regulator, the Agência Nacional do Petróleo, Gás Natural e Biocombustíveis (ANP). ANP advertises its tenders through international road shows and holds public hearings to tailor its concessions to companies' expectations.[527] Although Petrobras remains the most significant player in the Brazilian upstream,[528] the terms offered under the concessions (combined with several major deepwater discoveries)[529] proved attractive: major oil companies have become involved in the Brazilian oil sector and production has increased to the point that Brazil is the third-largest producer in the region and no longer a net importer.[530] The increase in competition – together with partial privatization of the NOC – also greatly improved Petrobras's performance, such that it became a model for NOCs worldwide. As a result, "Brazil has become the most well-known oil and gas success story in recent years" based on Petrobras's

[525] One lawyer indicated that Brazil's pre-salt PSA was a "disaster" that attracted insufficient investment (Interview with three lawyers, July 24, 2015). Márquez and Pérez (2014: 16-17) likewise point to Brazil as both a positive and negative example.

[526] Mares (2011).

[527] Rodriguez and Suslick (2009: 11) .

[528] Petrobras in 2010 controlled more than 95 percent of Brazilian production (Mares 2011: 34).

[529] Rodriguez and Suslick (2009: 10).

[530] Monaldi (2017: 15).

performance along with increases in reserves, production, and the country's success in achieving oil independence.[531] More specifically, Mexico could look to ANP's professionalism and close collaboration with the private sector, which "has been key,"[532] along with the specifics of Brazil's concession regime.

However, growing investment into Brazil's upstream oil sector culminated in the discovery of the Brazilian sub-salt reserves, estimated to contain at least 176 billion barrels of oil and natural gas.[533] Following this discovery, Brazil sought to seize "a real opportunity to become a developed nation"[534] and remade its regulatory framework to transition to production sharing agreements. The new agreements were far more interventionist than Brazil's concession, granting significant operational and technical control to Petrobras. As a result, they were poorly received by the private sector, slowing development of the new discoveries just as Petrobras was caught in major political scandals. The interventionist approach that accompanied Brazil's PSAs is therefore widely cited by experts as an example not to follow,[535] demonstrating how diffusion – in this case through learning – can result in both an incentive to adopt new models as well as a disincentive.

[531] Wood (2012: 17). Mares further adds a crucial lesson from Brazil's experience, which is that "the recognition that hydrocarbon exploration and production is costly and risky serves to limit resource nationalism, once the discussion becomes couched in terms of national development (2011: 47).

[531] See Reuters (8/10/2015).

[532] Wood (2012: 17).

[533] Blount (2015).

[534] OGJ (10/3/11), quoting President Dilma Rousseff.

[535] See Wood (2012: 17) and Tissot, who describes the PSA regime as "a setback from a competitive model" (2010: 14).

The second Latin American case that is believed to have influenced Mexican reform efforts is Colombia. Like Brazil, Colombia maintained an NOC monopoly over the upstream until 2003, after production and reserves had been in decline for four years.[536] The initial reforms introduced by President Álvaro Uribe were partially modeled on Brazil's experience,[537] and separated the country's oil reserves from Ecopetrol and placed them under the management of a newly established National Hydrocarbon Agency (ANH). The oil sector was deregulated further in 2005 with the goal of encouraging upstream competition. Relying on a concession regime, Colombia offered some of the most competitive terms in Latin America.[538] The attractiveness of these terms, combined with the regulator's credibility, produced a dramatic increase in the number of contracts and amount of activity in the country.[539] Many of the Colombian lessons are thus similar to those of Brazil's early reforms: beyond the clear success of the concession, their experiences also point to the importance of attractive terms and high-quality regulators, along with the importance of building in constraints to resource nationalism.[540]

According to interview respondents, Mexico's process of developing its new laws was a thoughtful one that involved consultation with both industry itself as well as extensive input from advisors. Because the stakes of dissolving a 75-year monopoly favored by much of the public

[536] Monaldi (2017: 16).

[537] Gómez and Sciabica (2014)

[538] Changes to the Colombian oil sector included the creation of a new petroleum regulator, reduced royalties, and offering of new concessions (Wood 2012: 16). Investors are allowed to maintain full control over operations, have low royalties, and can benefit from special treatment in the case of unconventional production (Ibarra-Yunez 2014: 19-20). Part of the reason for the attractiveness, apart from the growing risk of becoming an oil importer, was the poor security environment in prospective areas.

[539] Alpizar-Castro and Rodriguez-Monroy (2016: 734). See also Monaldi (2017: 17).

[540] Monaldi (2017: 17-18).

were so high, the government placed a strong emphasis on "doing it right."[541] Consultants, think tanks, and most likely the government's private advisors heavily emphasized the precedents of Brazil and Colombia as recent success cases (and mistakes) in the region. Those cases revealed the value that concessions could play in the Mexican sector – in spite of a deep-seated reluctance to actually embrace the term – as well as potential pitfalls to avoid when implementing PSAs. Mexico's final policy choice included the concession but left open the possibility of all three petroleum regimes. This choice not only maximized flexibility to reflect differences in oil geology, but likely also was a reaction to the enormous political difficulty of enacting petroleum change and the desire to avoid having to revisit petroleum reform.

Ultimately, Mexico scheduled five separate tenders for its inaugural Round One, running from December 2014 to June 2017. The first round, consisting of 14 offshore shallow water blocks, received only two winning bids, in part owing to the global price environment, but also in response to the specific terms offered by the Mexican government.[542] The second tender awarded three out of five PSAs for shallow water blocks, while the third tender awarded all 25 licenses for small onshore fields. The fourth tender offered ten deepwater blocks, receiving bids for eight. In each case, the auctioning authorities responded to the previous round's results by

[541] It should be noted that individuals working with the government itself were unable to provide any information on the Mexican reform owing to non-disclosure agreements. This information is therefore based on observations made by uninvolved parties.

[542] By the government's standards, the tender was unsuccessful; according to Vietor and Sheldahl-Thomason, "the president of the CNH stated that the round would be successful if 4-7 bids were successful" (2017: 9). The reasons for the restrictive terms may have been the government's assumptions in designing the reform. Lourdes Melgar, who was involved in the reforms, allegedly "noted that it had been designed under the assumptions of $100 oil prices, GDP growth of around 4%, and economic growth in other countries, all of which were below expectations as the reform was implemented (Vietor and Sheldahl-Thomason 2017: 15).

modifying contract terms, demonstrating that learning not only took place in the design process, but also from domestic experiences.[543]

In sum, Mexico's experience exhibits strong signs of learning, drawing on the experiences of countries in the same region with similar histories of high state involvement. Taking into account their successful transitions to a competitive framework (along with some backsliding in the Brazilian case), Mexico has adopted many elements of both countries' successful reforms: it has created an independent regulator, undertaken constitutional reform, given greater independence to its NOC, and has given itself the flexibility to adopt the concession system or other contractual forms, as necessary. As one observer notes, it is itself "poised to be an important example for other nations searching for a new model," not just imitating other countries' experiences, but improving on them. [544]

5 Conclusion

Both learning and emulation have played a significant role in promoting the three petroleum regimes discussed in this chapter, even as the meaning and content of those regimes themselves has changed. In the earliest periods covered by this study, the three regimes were largely focused on questions of sovereignty, control, and revenue. Early movers were extremely active in promoting their innovations abroad, working closely with foreign governments seeking

[543] See Vietor and Sheldahl-Thomason for a summary and bidding company names (2017: 9, 15). The emphasis on learning from experience is found in government statements: Miguel Messmacher, Mexican income undersecretary, recently described the ways in which the government responded to earlier tenders, concluding that, "We did our homework. This was a learning process, and we have learnt" (Webber 2015).

[544] Goldwyn (2013: 22) continues to explain that "Although Mexican officials frequently cite Brazil as an example to emulate, Mexico stands poised to improve upon that model by reducing direct political interference in operations of PEMEX and, hopefully, with more flexible costs brought by domestic content rules."

to implement their own reforms. The wave of changes inspired by OPEC and Indonesia was launched and carried largely through direct government-to-government ties, with some role for industry. The U.S. response, in turn, relied heavily on trying to shape the debate through government-sponsored educational outreach. In spite of these efforts, the developing country examples served as powerful models for other states, spurring a revolution in petroleum regimes throughout the following decades.

Today, the debate has shifted from one emphasizing revenues and control to governance issues, including concern over transparency, sustainability, and maximizing social as well as economic returns for the host countries. Those conversations involve an increasing number of players – both private and public – with tremendous legal and commercial sophistication. Beginning in the early 2000s, in response to a growing literature on the negative economic and political consequences of petroleum development, multilateral development institutions began to take a more active role in developing and disseminating model contracts and best practices in petroleum resource management. In 2002, the World Bank and UNDP hosted a workshop "that for the first time brought together all the interested stakeholders to discuss problems and challenges they had been facing in respect to revenue management" in the oil and gas industry.[545] This was followed by major publications on fiscal systems design by the World Bank, *Fiscal Systems for Hydrocarbons: Design Issues*, in 2006 and the IMF, *The Taxation of Petroleum and Minerals: Principles, Problems and Practice*, in 2010. More recently, the Inter-American Development Bank has become an active supporter of governance reform in the petroleum industry, devoting $732 million to energy institutional strengthening over the last five

[545] UNDP/World Bank (2004: iv).

years. These organizations join a network of bilateral aid institutions, such as Norway's Norad and Britain's Commonwealth Secretariat. Finally, non-governmental organizations such as the Natural Resources Governance Institute, NRGI, are helping to disseminate information and encourage coordination among oil producers, particularly frontier states. This effort is aimed at reversing a pattern that suggests that, outside of OPEC, direct government-to-government communication has fallen dramatically, motivated in large part by misguided fear of competition. Countries increasingly rely on private sector advisors to obtain information about petroleum regimes elsewhere.

At the same time, while industry efforts have not yet yielded a single standardized host government contract,[546] it is now common for countries to publish model contracts that are used as the basis for negotiation and for attracting new investment. These contracts, which are made public, are themselves analyzed and modified by other countries facing similar circumstances. According to Talus, Looper, and Otillar, "the availability of such widely used model contracts has reduced the need for a single common model Host Government Contract."[547] Beyond model laws, the efforts of the international expert community – whether private or public – have yielded greater internationalization of petroleum law: the small community of professionals and academics attend the same workshops, conferences, and lectures, read the same publications, draw on the same data sets, and receive their education in only a handful of universities largely

[546] This stands in contrast to other major petroleum contracts, which have become so standardized as to give rise to a discussion about the existence of a *Lex Petrolea* similar to the *Lex Mercatoria*. Documents containing standard provisions have been developed by a number of industry-supported organizations, such as the Association for International Petroleum Negotiators, AIPN (Talus, Looper, and Otillar 2012: 184).

[547] Talus, Looper, and Otillar (2012: 185).

located in the West.[548] They themselves serve as "bumblebees" that "pollinate" host countries with their ideas of what makes a strong petroleum regime.[549]

The heavy and increasing reliance on industry advisors raises an important question: To what extent does this type of mediated diffusion represent learning as opposed to emulation? Although many developing country oil producers with a long history of oil production have developed the necessary institutional capacity to internalize other countries' lessons and critically evaluate the information they receive, others continue to be passive consumers of advice. Even when countries are strongly invested in learning, they receive only pre-selected case studies that emphasize one petroleum regime over another due to the preferences of their advisor.[550] In the language of emulation and learning, countries operating under a "logic of consequences" may, in fact, be subject to a "logic of appropriateness" imposed by the worldviews of their advisors. This tension can be resolved somewhat by recognizing that learning need not occur under complete information. The assumption of bounded rationality accepts that the learner will often lack access to all relevant information and will filter that information through their own biases. Advisors impose an additional layer of filtering on that

[548] Talus, Looper, and Otillar point out that, "International petroleum transactions rely on a relatively small group of legal experts that act internationally […] the seminars, workshops and lectures of industry organizations such as the AIPN are similar in London, Jakarta or Adelaide. International experts and international conferences rely on international data banks of Host Government Contracts like provided by Barrows or OGEL. The leading publications in this area are sold internationally and the markets for the books seem to follow the areas where exploration and production of hydrocarbons is taking place. Academia relies on a small number of professors who teach international upstream operations, thus the same course can be taught in the United States, Australia, United Kingdom, Angola or Portugal and elsewhere" (2012: 191-192).

[549] Oil Company Negotiations Expert (August 20, 2015).

[550] Different advisors tend to have stated preferences for particular types of regimes, suggesting that the selection of advisors may have important consequences for regime outcomes.

process, but the principle of seeking to achieve the best possible outcome from a cost-benefit standpoint remains.

Although these questions will be revisited in the following chapter, the answer suggested by the preceding discussion is that learning and emulation can be distinguished – both conceptually and empirically. This may be difficult when the mechanisms are complementary, but numerous cases exist in which the logics of consequences and appropriateness offer competing policy recommendations. In those cases, domestic politics play a deciding role in choosing the winning logic. Even more importantly, this chapter demonstrates that the governments of host countries themselves – particularly developing countries – are not simply responding to the wishes of foreign countries, investors, or the market, but are actively involved in making petroleum policy as innovators and as adopters. Petroleum regimes are therefore, above all, a choice.

CHAPTER 5: COERCION AND COMPETITION

1 Imposing Petroleum Regimes

Since the days of Standard Oil, international oil companies (IOCs) have been popularly portrayed as grasping and exploitative, as dictating terms to host governments. This perspective is hardly surprising: not only are oil companies highly visible, but they have hardly been innocent of coercive behavior and market manipulation. The industry has been subject to antitrust investigations, implicated in attempts to overthrow governments, responsible for enormous environmental damage, and has been a beneficiary of colonialism. Nevertheless, while coercion most certainly defined much of the early relationship between IOCs and host governments, externally imposed policies and interventions are the exception rather than the rule. Companies' coercive power has eroded in the wake of market changes, and deals signed under coercion – whether in the form of a threat or merely unequal bargaining power – are unlikely to last. Recognizing this, industry actors increasingly emphasize notions of competition and market discipline. Rather than states, companies, or individuals, impersonal market forces allegedly determine what kinds of terms governments can demand without losing the ability to attract scarce capital. Although there is evidence to support this view, governments are motivated by more than economics and frequently choose to ignore the preferences of international markets. Both the coercive and competitive narratives that shape public opinion and much of the consulting industry's advice present host governments as fundamentally passive, allowing laws to be "imposed" on them. In this chapter, I argue that these accounts paint – at best – only a partial picture. While governments are certainly subject to international political and economic constraints, host countries still retain significant flexibility in their regime choice, as well as in the specific terms that they offer. Inward-oriented countries, in particular, have often consciously rejected investor preferences in pursuit of non-commercial objectives, even at significant

expense. Outward-oriented countries have been more sensitive to market demands, without ignoring lessons from learning or emulation. Broad patterns in industry history and individual case study evidence suggest that, when it comes to petroleum regimes, coercion has played only a limited role in the modern oil industry. Competition, though influential, is often only decisive in determining petroleum regime choices when combined with learning and emulation. Petroleum regimes, then, are largely a choice dictated by states' individual needs, preferences, and internal politics.

This chapter is developed in five parts. Part 2 revisits conceptualization of competition and coercion and outlines the expectations about the role they are expected to play in the choice of petroleum regimes. Part 3 explores both of the mechanisms in greater depth, particularly the underlying factors that have contributed to or limited their influence over time. Part 4 examines two cases in which countries rejected the pressures of coercion and competition. Iraq, in many ways, should have represented an ideal case for diffusion by coercion, yet acted against the preferences of the U.S. and international oil companies. Brazil, similarly, had been guided by concerns over competitiveness as recently as 1999, yet chose to override market preferences in 2010, demonstrating the limits of competition when pitted against domestic politics. Part 5 concludes the chapter and explores current trends in the market and their implications for diffusion by imposition – whether by markets or individual actors.

2 Diffusion by Imposition

Both coercion and competition are distinctive in that the impetus for change originates outside of the host country. In the case of coercion, the originator is a single actor or group of actors intentionally seeking change (or attempting to prevent change). Competition instead acts

diffusely by aggregating the preferences of the market, which responds collectively to changes in host government policy. Both mechanisms communicate a preference to host governments and promise negative outcomes from failing to conform to those preferences. In spite of its visibility, however, coercion – aided by power asymmetries – is likely to play a role under a narrower set of circumstances than competition, as outlined below.

2.1 Definitions

As defined in Chapter 2, coercion entails the conscious application of punishment and rewards to change the payoffs from a particular policy for another actor. Actors can be states, but might also be corporations, international organizations, and other groups or individuals. Coercion has four central characteristics:[551] asymmetry, intentionality, unidirectionality, and a focus on agency. First, coercion typically – though not always – involves power asymmetries that advantage stronger actors. These power asymmetries might be military or economic, but are generally material in nature. Although exceptions exist and weaker actors frequently attempt to coerce stronger ones, those with greater resources can more credibly mobilize sufficient threat and inducement to initiate policy change. Second, coercive power is wielded consciously. Policy change does not require actual implementation of punishment or rewards, but coercing parties must create the expectation that specific policy choices will be met with corresponding consequences. Third, by inducing policy change in the importing state, the coercing actor does not simultaneously create incentives to change the policy at home. Finally, by prioritizing the behavior of the coercing actor, coercion is agency-centered and emphasizes the preferences of

[551] These characteristics represent an "ideal type" of coercion and may not be fully present in every actual example.

the more powerful actor. Nevertheless, coercion is rarely met with passivity – coerced actors can resist by refusing to formally change their policies or by imperfectly implementing those changes.[552]

In contrast to coercion, competition emphasizes the ways in which interdependence among actors results in direct and indirect changes to actors' payoffs resulting from policy change. Directly, interdependence can induce policy change when non-adoption risks economic losses or when adoption promises cost savings.[553] Indirectly, interdependence exposes countries to externalities from others' policy decisions, engendering adaptive policy change.[554] Likely outcomes and market pressures are typically assumed to be sufficiently self-evident that competition is distinct from learning or coercion.[555] In its ideal form, competition exhibits four characteristics. First, it is largely unaffected by the distribution of power in the international system.[556] Second, it does not require conscious action, operating instead through a diffuse, non-hierarchical market mechanism. Third, competition is recursive, meaning that changes in one country generate externalities that may prompt changes among others, including prior adopters

[552] Similarly, Miller suggests that coercion and adoption are not necessarily linearly related, so the most easily observed attempts at coercive diffusion may not actually be the most powerful (Miller 2003: 874). For discussion on problems with translating policy change into implementation, see Berkowitz, Pistor, and Richard (2003: 168) and Shaffer (2013: 41).

[553] In Miller's typology, the closest equivalent to "competition" as a mechanism of legal transplants is the "cost-saving transplant," which explains borrowing as the result of a desire to save time and experimentation (2003:845).

[554] The reference to externalities emerges in Braun and Gilardi (2006: 299-300).

[555] Simmons, Dobbin, and Garrett describe competition as "mechanistic," stating that "Competition theorists assume that the pressure from a change in a competitor's policy so clearly indicates the range of plausible responses that whether and how governments learn about liberalization […] has no independent explanatory power" (2008: 23).

[556] This does not mean that competition affects all states equally. As Keohane and Nye observe, individuals exhibit different degrees of sensitivity and vulnerability (1977: 12-13) and thus will respond differently to the changes in the international market. Research on diffusion suggests that key competitors or comparable countries are more sensitive to changes in each others' policies than relatively dissimilar countries (Cao 2010: 824-825; Simmons et al 2008: 20-21).

and non-adopters. Finally, whereas coercion emphasizes individual agency, competition is structural in nature.

Revisiting the two-level model outlined in the Chapter Two, both of these diffusion mechanisms operate primarily on the international level, where actors are divided into North and South. Because coercion is facilitated by power asymmetries, it is most likely to take place across North → South interactions, where the Northern country's preferences are imposed on the South. Operating most effectively across similar states or peer groups, competition is strongest in South → South and North → North cases, particularly in instances where countries share similar competitive advantages. Because the impetus for change is located outside of the importing country, domestic politics would be expected to play a relatively small role in determining policy outcomes relative to learning and emulation. Nevertheless, outward-oriented elites may be more receptive to coercion and competition than inward-oriented ones due to their exposure to international markets and linkages with outside institutions. On the other hand, inward-oriented elites – particularly nationalists – are likely to try to resist external pressures, at least from developed countries. The model thus anticipates coercion to be at its strongest in interactions between an outward-oriented North and an outward-oriented South, whereas competition is most likely to take place between (1) a Northern exporter and an outward-oriented Northern importer, (2) either type of exporter paired with outward-oriented Southern states, or (3) between outward-oriented Southern exporters and counter-hegemonic Southern importers. Except when the importer is an inward-oriented Northern state, every instance in which a coercion or competition plays a potential role also offers an opportunity for diffusion by learning and emulation. As I argue in the remainder of this chapter, diffusion by imposition is far less influential in the oil industry than popular narratives might suggest. Although competition and coercion do play some

role, domestic resistance and changes in the international market have weakened both of their influence.

2.2 Theoretical Expectations for the Oil Industry

Based on these definitions and as outlined in Chapter Two, it is possible to generate hypotheses about the role of coercion and competition as they apply to petroleum regimes (concessions, production sharing agreements, and service contracts). Concessions have historically been associated with the North – both because they are almost universally applied in developed countries, but also because they were widely imposed by the North on subject territories. For the early history of the oil industry, the only alternative to concessions was the service contract regime, associated with full state ownership, where foreign companies are limited to the role of contractors.[557] Beginning in the 1960s, a second alternative was introduced to strike a balance between the need for investment and concerns over sovereignty. The PSA characterized oil companies as contractors, but allowed them ownership over a share of production while maintaining strict state ownership of reserves. This innovation, like the service contract, is associated with the South, and has achieved enormous success as a policy export. Generally speaking, the petroleum regime supplied by the North through both coercion and competition was therefore the concession,[558] while the South supplied service contracts and PSAs. Because no system other than the concession is associated with the North, neither coercion nor competition should lead to other regimes in the North. Southern exporters are

[557] As service contractors, oil companies were denied equity ownership of oil reserves and production.

[558] As discussed below, the PSA eventually came to be viewed as preferable to the service contract and was promoted by the North in cases where the concession contract proved to be politically unpalatable.

unlikely to possess the material resources – or the will to apply them – to enforce a policy change in the North, while competitive pressures among developed countries are likely to reinforce the concession.

Expectations regarding coercion and competitition in the South differ across outward-oriented developing states and inward-oriented, nationalist ones. By virtue of its openness, the former group is more likely to experience diffusion by coercion as well as by competition. Developed country and IOC coercion is likely to strongly favor the concession. Which regime is favored by competition will depend to a large extent on the characteristics of the policy importer's primary competitors. Depending on whether factors like resource endowment, industry maturity, or political stability bear more similarity to other PSA or concession-users, either of these two systems might be adopted. Service contracts, on the other hand, are unlikely to be spread by market competition, as they are the least-favored choice among nearly all types of non-state oil companies.[559] Inward-oriented developing country elites, on the other hand, are likely to be less vulnerable to coercive pressures by international players.[560] Even when these countries do see some need for foreign capital, they are unlikely to be swayed in favor of the concession for political reasons. Instead, competitive pressures are more likely to encourage adoption of the PSA. These expectations are summarized briefly in Table 14.

[559] Even among NOCs, service contracts are likely to be less preferred than the two alternatives, as service contracts tend to be less profitable than either of the other two systems.

[560] Specifically, as outlined in Chapter Two, the elites in inward-oriented states are likely to be less sensitive to reputational costs and are frequently insulated from international market pressures by virtue of their industries or professions.

TABLE 14. DIFFUSION OF OIL REGIMES BY IMPOSITION

		Coercion	Competition
Northern Importer	Inward	-	Concession
	Outward	-	Concession
Southern Importer	Inward	-	PSA
	Outward	Concession	Concession PSA

The patterns of diffusion outlined in Chapter Three might appear to support the idea that competition and coercion have been the drivers of petroleum policy change around the world. After all, the North overwhelmingly and nearly exclusively employs the concession regime, while the South has largely avoided the service contract in favor of the PSA and, to a lesser extent, the concession. And while competition and coercion have certainly played some role, the following discussion reveals limits to their influence. Instead, and as largely confirmed by Chapter Three's statistical analysis, I suggest that the diffusion of petroleum regimes, as a predominantly Southern phenomenon, can only be explained by recognizing the preeminence of demand-based mechanisms of learning and emulation, as outlined in Chapter Four.

3 Coercion and Competition in the Oil Industry

Both coercion and competition have been widely observed and discussed in the context of the oil industry, theoretically as well as empirically. They are at the heart of the blood for oil and corporate imperialism narratives. Coercion is most strongly associated with the formative period of the oil industry, where it manifested itself as unequal bargains and resistance to

contract negotiations and legal changes. Competition emerged as a defining force in later years, gaining prominence in the 1990s, when it supported liberalization of oil industries throughout the developing world. The following discussion outlines the ways in which coercion manifests itself in the oil industry, along with the limits that historical developments have placed on its effectiveness. It further outlines the international and country-specific determinants of competition and the circumstances under which it is more or less influential. It concludes by examining the change in the prominence of these two mechanisms from the post-World War II period to the present. In the case of both mechanisms, changes in industry structure as well as a variety of other developments have weakened their effectiveness at bringing about specific forms of policy change, although competition does continue to play some role and influences countries' relations with each other.

3.1 Coercion and the Obsolescing Bargain

Implicitly or explicitly, coercion lies at the heart of the mainstream literature on foreign direct investment (FDI), particularly Raymond Vernon's obsolescing bargain model (OBM).[561] Both companies and their home governments have access to a range of tools consisting of incentives and punishments to change host country behavior. Yet many of these have become

[561] The OBM posits that the terms of an investment follow a pattern that initially favors the investor, but shift in favor of host countries over time. Before the investment has been made, foreign investors hold disproportionate bargaining power in the form of capital, knowledge, and market access, demanding (and receiving) generous terms. Once the project moves forward and proves successful, those terms begin to appear unfair and the host government has the incentive and ability to force renegotiation to reflect the change in bargaining power. This unfairness may not only be the result of the terms of the deal itself, but can also reflect changing circumstances more generally, such as a shift in the price environment that gives the oil companies a windfall. The OBM appears particularly effective in describing relations in the oil and gas industry (Joffé, Stevens, Lux, and Searle 2009: 22; Kobrin 1987: 612-613). For the original description of the obsolescing bargain, see Vernon (1971: 46-53). The model has evolved to account for ways by which investors attempt to protect themselves. Moran (1974), for example, emphasizes the staging of investments, and Ramamurti (2001) considers bilateral and multilateral investment agreements.

less effective over time, both because of changes in the instruments themselves and due to growing resistance from host governments. Although the term "coercion" implies that host governments are adopting policies they might not otherwise choose, this does not imply that coercing actors are necessarily seeking to impose highly unbalanced or unethical deals. In fact, practitioners tend to be highly cognizant of the fact that extreme instances of coercion are likely to backfire.[562] With the principle of sovereignty well-established under international law, asymmetric deals are not only unlikely to last, but contribute to resentment against individual companies or countries that can lock them out of markets in the long term.

3.1.1 Coercion by Companies

By the logic of the OBM as well as corporate imperialism, oil companies should attempt to coerce governments into adopting fiscal regimes that align with their preferences. Those preferences, however, are not always clearly defined. The textbook view on fiscal regimes is that oil companies favor concessions above all others. Not only do concessions have the advantage of allowing companies to book reserves while typically offering more favorable financial terms, but they are also similar to what many oil companies find in their home countries.[563] Early reactions to the PSA strongly align with this view, but as PSAs have become commonplace, firms have adapted, in some cases even preferring PSAs.[564] At the same time, virtually all accounts agree

[562] As noted by one oil company representative in an interview with the author, it is preferable to have educated rather than naïve counterparts in order to avoid asymmetric deals that are inherently unsustainable. Instead, companies aim to achieve win-win deals (August 2015). While this assertion may be somewhat self-serving, it does reflect the priority companies place on stability of investments.

[563] Johnston (2001).

[564] Experts from a range of specialties and various perspectives on energy investments agree that companies are comfortable working within either fiscal environment. In some cases, PSAs may even be preferable to concessions, as they are self-contained and thus more stable, and offer contractual protections. Based on the author's in-person interviews with a member of an IGO (November 2014) an industry consultant (December 2014); former lawyer at

that oil companies strongly resist service contracts.[565] Over time, coercion should increasingly be focused on avoiding service contracts rather than resisting all devastations from the concession. This resistance can take several forms.

First, corporations have the power to take their business elsewhere. Companies possess resources that countries hope to attract: capital, management expertise, and technology being chief among them.[566] In some cases, market entry by a single company can have a sizeable effect on the national economy, as in Albania, where one company, Bankers Petroleum, accounted for nearly six percent of GDP and over a third of FDI in 2014. [567] The credibility of the threat to walk away from an investment may, however, be weakened after the start of production or based on company characteristics.[568] Nevertheless, this threat is quite possibly the most powerful

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an IGO (December 2014); finance professional specializing in energy (June 2015); energy lawyer (July 2015); energy specialist at an NGO (July 2015); petroleum engineer and economist (July 2015); and a Skype interview with an oil company negotiations expert (August 2015).

[565] This logic only applies to publicly-traded oil companies. For instance, during an in-person interview with the author, a service company representative (July 2015, Houston, TX) noted that NOCs are less bound by the rules than IOCs and that service companies, which are also active in petroleum exploration and production, prefer not to book reserves. Likewise, an oil industry representative (August 2015, Skype) stated that "gargantuan" oil companies are less concerned with reserve booking than independent oil companies, although Wall Street does still pay attention to reserve replacement rates. As the number and prominence of state-owned and other players proliferates and further deviations from standard service contracts become the norm, the pattern of preferences may change again.

[566] Countries have access to some of these resources themselves – directly or through service companies – but often only at considerable expense. Projects with substantial technological complexity and scale continue to rely heavily on Supermajors.

[567] Bankers Petroleum (2017).

[568] Some companies have been willing to walk away from entire countries for the sake of principle or because investment terms have deteriorated too much. One of the most prominent cases in recent history is that of ExxonMobil, which refused to accept the Venezuelan government's changes to its fiscal regime, choosing instead to initiate an expropriation case with ICSID. In doing so, ExxonMobil not only gave up its current projects in Venezuela, but in all likelihood damaged its prospects for re-entering the country in the future. Its ability to do so is partly a reflection of the company's geographic diversification and size, which gives it greater flexibility than a smaller company might have. In the Bankers Petroleum case, Albania represents the company's only producing assets, meaning that the threat to walk away likely holds little credibility.

coercive tool available to firms when the supply of potential investors is low; its effects are reduced when other actors are willing and able to step in.

Second, a corporation with a strong presence in the host country can also engage in lobbying to influence policy choice. Corporations point to their employment figures, tax payments, investments in local infrastructure, political contributions, and other activities to gain access to policy-makers in order to educate them about the consequences of policy changes.[569] Oil companies can also engage in indirect lobbying, whereby local communities or groups advocate on their behalf.[570] The effectiveness of both of these approaches is, however, limited by several peculiarities of the industry. For one, the oil industry operates at a substantial disadvantage in terms of public perception. Major environmental disasters such as BP's 2010 Macondo blowout and the Exxon Valdez oil spill in 1989; involvement in major corruption investigations such Brazil's ongoing Petrobras scandal; and association with violence in Nigeria, Libya, Syria, and elsewhere, have led to significant mistrust.[571] The oil industry also produces few backward linkages, reducing the number of potential advocates[572] and feeding into a

[569] Lobbying has been recognized as an important activity within the industry since the 1940s and 1950s, when companies began to set up corporate representation in host countries in response to rising tensions directed against the industry (Turner 1983: 87). In the United States, oil and gas is one of the leading industries in terms of lobbying expenditures, accounting for nearly $130 million in 2015, according to Open Secrets.

[570] Such communities might include other business groups, employees, or even towns or regions that have good relationships with the industry.

[571] According to the 2016 Edelman Trust Barometer, the oil industry is trusted by only 47 percent of the surveyed population in 25 countries.

[572] As Turner notes, most of the companies' host country allies have been fairly weak: the local workforce is quite small and local businessmen that might otherwise have shared economic preferences often feel sufficiently threatened by the oil industry to undermine their willingness to support FDI-friendly policies (1983: 89).

mismatch between community expectations and investment reality.[573] Even where relations with the community are good, the industry's ability to influence policy has been limited by a tendency to be located in enclaves with little interaction with political decision-makers.[574] Ultimately, while the industry may appear enormously powerful, former Secretary of OPEC Francisco Parra points out that:

> "there are few areas where the general public's perception of the corporate power of multinational oil companies is so at variance with the facts – laughably so, for anyone remotely familiar with the amount of management time devoted to complying with the (sometimes unduly burdensome) oceans of governmental regulations applying to their companies. Obviously, some lobbying is done – industry views have to be conveyed somehow to the powers that be – but in today's world, as practiced by the multinationals, it is for the most part no longer either sinister or corrupt."[575]

Third, corporations have access to coercive legal tools, including arbitration clauses, choice-of-law-clauses, and stabilization clauses. Arbitration clauses enable conflict resolution at

[573] As one interviewee pointed out, an important responsibility of oil company negotiators and representatives is to manage host country expectations, especially in terms of understanding the timing of investments (August 2015, Skype). As unconventional production has moved companies into non-traditional producing areas and more urban environments, companies are also increasingly concerned with the "social license to operate." Even where operations are legally permitted, failures to manage community relations can undermine operations and even trigger attempts to change local policies (Interview with oil industry consultant, December 2014, Washington, DC).

[574] Turner, for instance, noted that "The picture of oil companies manipulating host governments by fair means or foul is certainly misleading particularly because of the relative isolation of the companies both politically and geographically. In most cases, the companies were extremely unpopular, with local allies far outnumbered by local opponents, and what saved them for so long was their control of a key industry. … It has really only been in the tiny sheikhdoms and emirates around the Gulf that the location of industry operations put oil companies in everyday contact with local political elites" (1983: 86-87).

[575] Parra (2004: 332).

specified arbitration courts.[576] Choice-of-law clauses specify the laws that apply in the event of conflict, offering familiarity and protection from changes in host country law during disputes.[577] Stabilization clauses freeze the terms of the contract at the time it is signed, theoretically resolving the OBM in favor of the investor. However, their effectiveness is highly debated, as host governments have successfully appealed to *clausula rebus sic stantibus*, or the doctrine of changed circumstances to initiate renegotiations. All of these tools can offer investors some peace of mind about their ability to receive compensation in the event of the dispute, but they are largely ineffectual in preventing petroleum regime change. At best, they make changes sufficiently expensive to create an incentive to grandfather existing projects into the new regime, but the sovereign right to nationalize means that they cannot effectively prevent legal change.

Fourth, a powerful tool that companies used to great effect in the past was control over downstream markets. For much of the industry's history, oil consumption was concentrated in the developed world, where a handful of major oil companies controlled refining and distribution networks. Host governments that antagonized the companies could be threatened with boycotts that could cut them off from consumer markets. This threat has been severely weakened by de-integration and the growth of emerging markets as major consumers of petroleum. Private

[576] The arbitration process tends to be faster and less expensive (although anecdotal evidence suggests that costs may not always be lower) than regular court proceedings, but the existence of arbitration clauses also guarantees corporations a form of recourse that they can initiate. Arbitration has the additional advantages of allowing corporations to choose the judges and having the proceedings remain private, avoiding negative publicity associated with investment conflicts.

[577] Most commonly, they specify New York, Stockholm, Paris, or other major transaction centers located in developed countries. While common, choice of law clauses are exclusively used in agreements in developing host countries. This may, as Parra notes, reflect a fundamental imbalance in the power between host countries, home governments, and companies (2004), but also tends to be indicative of a concern that the local legal structure is insufficiently developed or independent of political leadership to serve as a neutral arbiter in conflicts.

companies have lost market share, reducing their ability to impose punishment, and antitrust laws limit their ability to cooperate in imposing punishment.[578]

Finally, companies have, in some cases, also made use of bribes or other ethically and legally ambiguous tools to coerce host governments.[579] The most notorious cases have involved governments granting corporations the right to write their own laws, while others have consisted of "sweetheart deals" for individual companies. While these strategies are forbidden by many home[580] and host countries, allegations of corruption unfortunately still do emerge with some frequency. Numerous international initiatives exist to curtail these activities through enhanced transparency,[581] but progress has been mixed.

In sum, corporations have a variety of tools at their disposal to coerce host governments. They are, however, of varying – and often diminishing – value in creating or preventing petroleum regime change. While market observers could once state that, "Standard Oil of New Jersey is much more powerful vis-à-vis Indonesia … than ever the British Empire was against

[578] This was already a significant issue in the OPEC nationalizations, where State requested antitrust exemptions for the oil companies in order for them to enter into group negotiations.

[579] One common practice that can fall into an ethically grey area is the hiring of relatives of the ruling elite (who may or may not be industry experts). This practice is sometimes employed as a means of mitigating project risk, as these individuals can enhance goodwill or access to policy-makers. Other tools for which the industry has historically been implicated are unambiguously problematic, such as the use of company resources to fund violence against the government or other groups. One of the more notorious cases was that of ITT in Chile, which has been accused of "lead[ing] a campaign of subversion against Salvador Allende" in 1969. Such examples, however, are in many ways the exceptions that prove the rule: Although the industry might possess the resources to undermine governments "it is the general refusal of the oil companies to play dirty politics which is ultimately more significant" (Turner 1983: 220).

[580] The most prominent case is the United States, where the Foreign Corrupt Practices Act (FCPA) forbids the use of bribery.

[581] Examples include Transparency International, the Extractive Industry Transparency Initiative, Publish What You Pay, and the Natural Resource Governance Institute.

the German," [582] the coercive powers of companies are today heavily circumscribed. Oil companies operate under intense domestic and international scrutiny, limiting the effectiveness of coercion. Changes in oil markets, international law, and other industry developments have also rendered oil companies less powerful than their reputation warrants. As a result, although companies can still make the switch to service agreements highly unattractive, they have largely conceded the battle against PSAs.

3.1.2 Coercion by Home Countries

While companies possess clear commercial motivations for attempting to coerce host governments into adopting certain fiscal regimes, home countries are also potentially powerful sources of coercion, as noted by blood for oil theorists. The reasons for intervention are varied: home countries' oil companies may be significant sources of taxes[583] and employment, giving companies influence over policy-makers and bureaucrats. Government representatives may also see advantages to having strong domestic companies in strategic industries like energy production. [584] They might also be concerned about the "demonstration effect" of expanded government ownership in the form of nationalization and service contracts. At the same time,

[582] Caldwell (1971).

[583] The issue of taxation varies by tax code. Although the U.S. has a worldwide taxation structure, certain tax payments to other countries can be deducted from U.S. taxes – an issue that has strongly influenced foreign governments' tax designs, which have sought to maximize take while also reducing the burden on companies (author's interview with energy tax lawyer , June 2015, Houston, TX).

[584] Turner describes the relationship between home governments and companies as "symbiotic," and therefore a justification for intervention (1983: 80). This view has historically been represented strongly in certain U.S. agencies, especially in the Treasury Department and in the U.S. military, which have advocated for a more activist U.S. petroleum policy. Other agencies, such as the State Department and the Justice Department, have demonstrated somewhat more mixed positions towards the petroleum industry over time (1983: 32). The benefits from limited control over strategic resources also extend to allies: during the Cold War, U.S. policy heavily emphasized maintaining ample supplies of oil for the "free world," and developed countries continue to pay attention to investment levels in foreign countries as part of their own "energy security" (see, for example, UNECE 2008).

home governments may be cautious in employing coercive strategies, which can undermine other foreign policy goals, and their tools of coercion are more limited than widely believed.

The most obvious – and least likely – coercive instrument available to home governments is naked military power. IOCs are disproportionately based in developed countries: the U.S. and Britain alone are home to five of the seven Supermajors, and include six of the ten top global energy companies.[585] Along with other prominent home countries like China and Russia, they have among the world's highest military spending and the most well-developed intelligence agencies, giving them the capability to intervene overtly or covertly in other countries' affairs. In spite of these capabilities, this tool is rarely applied.[586] Military intervention represents a clear breach of sovereignty and would in almost all cases require a declaration of war, inviting condemnation by the international community.[587] It comes with reputational costs and could prompt boycotts, sanctions, or other punishments. The undesirability of this route is reflected in U.S. policy: "since Roosevelt's Good Neighbor Policy was enunciated in 1933, the United States abjured the right of military intervention to protect the property rights of its nationals," justifying

[585] Platts (2017). Methods of ranking energy companies tend to favor firms from developed countries, as they usually include only publicly traded companies. Alternative measures of prominence, such as control over oil reserves, present a vastly different picture in which state-owned firms with little or no international presence play the leading role.

[586] Writing in 1983, Turner reports only two "'no-holds-barred' interventions […] the invasion of Iran during the Second World War and the 1953 Iranian coup" (83). Philip argues that "Unless the position is desperate, military intervention is likely to be seen as far too drastic" (1982: 153).

[587] Turner, for instance, notes that "Host countries were sovereign states, and it was only in the case of a very weak government, such as in Persia in 1922, that any imperial power could hope to bring in troops without declaring war on the host country" (1983: 80). Military intervention of this type would constitute a breach of UN Charter, Article 2, and would in all likelihood provoke a strong international response.

overt intervention only for geopolitical reasons.[588] Even assuming that international opinion favors home country intervention, the costs of modern war are substantial,[589] and would be even more so if an occupation force is required. The case of Iraq (discussed below) stands out as a prominent example of the direct costs and unintended consequences of military intervention. Finally, overt and covert intervention leaves a historic legacy that can disadvantage the home country and its companies for generations.[590]

A potentially more useful coercive tool is economic pressure.[591] Home governments can impose five types of sanctions: aid, assets, finance, money, and trade.[592] Of these, all but monetary sanctions have been used in the oil industry.[593] Although the significance of foreign

[588] Rodman (1988: 87) further elaborates that "When force was used, it was done covertly, and its main thrust was generally political rather than economic. In the absence of a perceived association with "communism" or the Soviet Union, force was not considered a suitable policy instrument in dealing with economic nationalism."

[589] Lipson argues that "the costs of using interventionary force have risen markedly for all advanced capitalist states," adding that "its potential targets have multiplied," making this a particularly unsustainable strategy (1985: 151). Rodman agrees, stating that "The main reason for the infrequent use of force has been the increased domestic and international costs of intervention. According to Bryce Wood, the United States wrote off military intervention as a means of investment protection after the landing of the marines and the occupation of Nicaragua (1927-1932), the duration and cost of which were out of proportion to the interests involved" (1988: 87).

[590] Industry commentators have suggested that part of the success of national oil companies from developing countries stems from a dislike of Western oil companies owing to a legacy of imperialism and neo-imperialism.

[591] According to Rodman, the "primary instrument" by which the United States enforced the rules of the international foreign direct investment system "was economic pressure" (1988: 10).

[592] See Kirshner (1997: 41). Sanctions, as Kirshner notes, can be used to achieve goals other than coercion, such as "to communicate its preferences, support allies, deter others from engaging in similar activity, and dissuade the target from expanding its objectionable activity" (1997: 34). The use of sanctions therefore does not necessarily imply an attempt at coercion.

[593] One potential form of coercion involving money that has been considered on a number of occasions but has not been used involves the pricing of oil. In this case, major oil exporters such as Russia and some of the Gulf states have threatened to move from dollar pricing to one based on a different currency or basket of currencies. Given the volumes of dollars involved in the oil trade, such a move could have severe repercussions on the United States, although it would not be without complications and consequences for the rest of the world.

The general effectiveness of sanctions, and coercion more generally, has been questioned by Hughes and Gholz, who argue that "evidence shows that the structure of energy markets make it difficult for governments or firms to use fossil fuels as instruments of coercion, or to enforce changes in target states' behavior through the imposition of sanctions" (2016: 488).

aid varies and can easily be dwarfed by oil export earnings,[594] it is not trivial for countries at the early stages of developing their oil industries. It is also easy to target and control and therefore has been widely used or threatened.[595] Asset-based sanctions, which involve the seizure of host country resources, were famously used in wake of the Iranian nationalization in 1979, when President Carter passed an executive order[596] to freeze Iranian assets held in the United States. The amount – exceeding $10 billion at the time – was the largest asset freeze in American history.[597] Although potentially useful,[598] sanctions raise numerous legal questions around sovereign immunity. Finance-based sanctions, which restrict the host government's access to debt and equity markets, can also be devastating, affecting not just domestic activities, but international ones.[599] Significantly, they can stall investment into new oil production and maintenance, with long-term repercussions. Finally, trade-based sanctions place limits on exports

[594] Total U.S. official development assistance in 2015 was just over $31 billion (OECD 2017). In contrast, even with oil prices at historically low levels, OPEC net oil revenues for 2015 were $404 billion (EIA 2017).

[595] Rodman points to Argentina, Brazil, Peru, Jamaica, Guyana, and Bolivia as countries in which the U.S. threatened to withhold new aid authorizations (1988: 49). Sometimes its use has been involuntary, as in the case of the Hickenlooper Amendment, which is triggered automatically. In Indonesia, efforts were consciously made by the State Department to avoid invoking it in order to prevent the host government from moving towards closer relations with the USSR (AmEmb Djakarta 5/17/1963).

[596] Exec. Order No. 12170, 44 Fed. Reg. 65,729 (1979).

[597] See McGreevey (1980: 387), who states that "The total amount of frozen Iranian assets was first estimated at between $8 and $9 billion dollars, one hundred times greater than the estimated amount of Chinese assets frozen between 1950 and 1979. In fact, the frozen Iranian assets actually exceeded $10 billion."

[598] Even when not invoked, the presence of significant state assets located in foreign countries has the potential to limit host countries' actions. Venezuela, for example, possesses significant holdings in the United States in the form of Citgo refineries and distribution networks, which could be a potential target for asset seizures in the event that Venezuela fails to make arbitral award payments. This became a particular concern during arbitrations with ExxonMobil and other companies following nationalizations in 2007, which prevented Venezuela from seriously pursuing a sale of Citgo.

[599] Klapp notes that withholding of political support or finance could affect numerous state bodies: "Ministries of finance and public oil companies themselves depended upon continued external financing from international banks, foreign companies, or foreign governments. Public oil companies were also vulnerable if they engaged in business deals so important that the costs of delayed contracts could place entire governments in jeopardy" (1987: 62).

or imports involving the host country, affecting the transfer of technology and revenues. A.T. Kearney reports that, "Since mid-2012, Iran has consistently missed between 600,000 and 800,000 b/d of crude oil production due to unplanned shutdowns" related to sanctions.[600]

Finally, home governments, like companies, can make use of legal tools to punish or deter undesirable policies. By asserting that the law governing foreign investments is international law[601] governments can set limits to the conditions under which nationalization is legal. They can also negotiate for additional investor protection through bilateral investment treaties (BITs) or multilateral institutions such as ICSID and MIGA.[602] Finally, they can offer state-backed insurance or loans[603] that raise the costs of investment disputes by making the home government the claimant.

As this discussion illustrates, host countries have numerous options for coercively influencing host governments' choice of fiscal regime.[604] However, the desire to intervene on behalf of their companies must be balanced against other concerns. Experience suggests that

[600] Conversely, the IEA predicts that the lifting of sanctions could increase Iranian production by 800,000 barrels per day, or 1 percent of the world's oil supply. See A.T. Kearney (2015).

[601] Muchlinski indicates that this is one of two principal legal techniques that allows capital-exporting countries to "control host state sovereignty," with the second being support of stabilization clauses, discussed in the previous section on corporate coercion (2007: 578-579).

[602] BITs and similar efforts at multilateral treaties fall into what Ramamurti calls "tier-1 bargaining" the precedes individual bargains discussed under the obsolescing bargain model. Such tier-1 bargains "weaken the hand of host governments […] while strengthening that of their MNCs" (2001: 24). A similar point is made by Wälde, who states that such international bargains were developed in large part to eliminate the need for direct intervention: "the politicisation of investment disputes, when home states intervened militarily or only politically against expropriating host states, has so far not reoccurred. That was very much the intention behind the international investment treaty system, including ICSID and MIGA" (2008: 160).

[603] Examples include the Overseas Private Investment Corporation, Export Development Canada, Japan Bank for International Cooperation, or Euler-Hermes.

[604] It should be noted that, even where these tools have been used, they have not always been particularly effective. Pointing to conflicts between the United States and Mexico, Britain and Iran, the United States and Peru, and the United States in Cuba, Turner argues that "parent government pressures have been of limited importance" (1983: 81).

intercession produces unintended consequences that may – from the home country's perspective – be worse than not intervening. An otherwise successful intervention can undermine the legitimacy of host governments, leading to their overthrow or to civil unrest.[605] Perhaps more importantly, intervention on behalf of companies can actively undermine other political priorities. During the Cold War, U.S. policy-makers were particularly concerned that a heavy-handed approach could drive host countries towards Communism or even alliance with the Soviet Union.[606] Although many host governments fear or expect home government intervention, the track record – discussed in Parts 3.3 and Part 4 below – paints a less activist picture.

3.1.3 Resistance to Coercion

A final consideration in the effectiveness of diffusion by coercion is the character of the host country itself: Some states may be more easily coerced than others.[607] Countries with greater bargaining power in the form of military resources, strong alliances, natural resources,

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[605] Rodman argues that, "In Brazil, Argentina, and Peru, informal economic pressures on behalf of "aggrieved" companies undermined the economic base and political standing of democratic reformist governments, indirectly contributing to their replacement by military dictatorships" (1988: 164). Likewise, while the overthrow of democratically elected Mossadegh initially resulted in the reinstatement of the Shah and favorable terms for reintroducing Western companies into the Iranian oil industry, in the medium term, it led to powerful resentments that contributed to Iranian revolution.

[606] Similar restraint can also be seen by both the French and American governments, which "did not act to protect their companies' interests [in Algeria in the 1960s and 1970s]: both were concerned about the possibility of the newly independent Algerian government increasing its connections with the Soviet Union" (Marcel 2006: 26).

In fact, research on the use of coercion by the U.S. government suggests that overt or covert force were only utilized to support the oil industry when those actions would also "further ideological objectives associated with minimizing the prospects for communist regimes in host countries" (Krasner 1978: 137).

[607] The question of whether or not sanctions can hurt the economy is separate from whether or not that pain can actually induce policy change. There has been much debate about whether sanctions "work," which depends in large part on whether or not sanctions can effectively target the key decision-makers in the country. For a discussion on what makes sanctions more or less effective, see Kirshner (1997). See also Rodman, who states that "The susceptibility of a target state to economic pressure was the key to whether regime maintenance could be achieved through economic sanction," at least until the late 1960s (1988: 74).

and diversified or large economies can more effectively resist foreign pressure. They do so by raising the cost of punishment or promised reward necessary to change their behavior. Political factors can also affect bargaining power by making countries more willing or able to shoulder the potential burden of punishment. Governments that benefit from stable domestic political coalitions[608] can absorb economic costs or other disruptions more easily than those who risk losing power from foreign interventions. Even if punishment can be effectively meted out on a population, policy change may not follow if the elite remains insulated from these effects.[609] One prominent case concerns UN sanctions placed on Iraq on August 2, 1990, a response to Iraq's invasion to Kuwait and an effort to block the development of weapons of mass destruction. Sanctions produced a near-complete multilateral trade embargo that froze all Iraqi foreign assets, imposed enormous economic costs, and contributed to the deaths of hundreds of thousands of Iraqi children.[610] Yet even after more than a decade in place, sanctions appeared largely ineffective in changing Iraq's behavior or removing Saddam Hussein from power,[611] in large part because they failed to "effectively target or affect political or military elites," instead "hit[ting] the weakest and most vulnerable members of Iraqi society, those with the least ability to

[608] Klapp points to the importance of domestic coalitions in shaping states' relationships with the private sector. Where domestic coalitions can deliver the resources and votes to the governing coalition, states will support public enterprise-based policies over those preferred by multinational corporations (1987: 42).

[609] For this reason, democracies may be more sensitive to punishment than dictatorships.

[610] The human costs of the sanctions were so severe as to generate an oil-for-food program in 1995 designed to allow the Iraqi government to sell oil whose proceeds could only be spent on humanitarian supplies, overseen by a special coordinator.

[611] Some officials maintain that the sanctions were at least partially effective. Gen. Brent Scowcroft, national security advisor for President George H. W. Bush, stated that "'They worked in the sense that he was never able to rebuild his conventional army. When this war started, the Iraqi Army had no more than one-third of the strength it had possessed at the beginning of the first gulf war. But imagine that there had been no sanctions. Is it reasonable to suppose that the weakened Iraqi Army we just faced would have been so weak? I doubt it." (Rieff 2003).

influence decisions."[612] As an inward-oriented, authoritarian state with an insulated elite, Iraq was able to withstand concerted international efforts at coercion.

More generally, susceptibility to coercion by home governments and companies has changed over time. Many major oil producers saw their first foreign oil investments before even achieving independence or developing industry expertise, making it difficult to judge the likely outcomes of investments. With little autonomy or information, host governments signed unbalanced concessions, such as the Persian D'Arcy concession. Even so, resistance to the international oil companies by host governments dates back at least to the beginning of the 20th Century.[613] With independence, economic development, and acquisition of expertise, countries have become increasingly successful in their resistance, manifested in renegotiated deals and new investment terms. They have also taken efforts to collectively improve their negotiating position. A turning point was the formation of OPEC, whose role has crucially included information exchange and solidarity in formulating oil policy. Thus, when Iraq and Algeria launched efforts to nationalize their oil industries, OPEC members agreed to work together to undermine the effectiveness of boycotts.[614] Finally, host governments have taken an active role in shaping international law to support their interests. Most prominent among these activities is

[612] Global Policy Forum (2002).

[613] Turner notes that, "As Early as 1900 the original Standard Oil ran into bitter political resistance in Romania, then a major oil-producing power," followed by significant disputes with Russia, Mexico, Peru, Argentina, and Iran within the next decade (1983: 68-69).

[614] Marcel states that "The Iraqi and contemporaneous Algerian moves to end the concessions by nationalization were supported by OPEC resolutions and indications that OPEC members would try to frustrate any attempt by the companies to boycott Iraqi or Algerian oil" (2006: 27). A State Department memo appears to confirm this view, indicating that private assurances from Libya and Iraq "have almost certainly played a major role in strengthening the Algerian hand, as evidenced by the fact that in February Algerian President Houari Boumediene partially nationalized French oil assets in Algeria the day after the return of his oil minister from a meeting of Mediterranean oil ministers in Tripoli" (Brown and Rives 6/18/1971).

the UN Doctrine of Permanent Sovereignty over Natural Resources, which establishes the right of a host government to nationalize industries under customary law so long as the action is non-discriminatory, in pursuit of the public interest, and is accompanied by prompt and adequate compensation.

In sum, host governments have, individually and collectively (and helped by geopolitical and market developments), found ways to resist foreign coercion. Already by the 1980s, Turner noted that, in spite of a substantial academic literature that emphasized the bargaining disadvantages of host countries, "it would be a mistake to stress host governments' lack of power or disguise the fact that resistance to the companies had steadily increased."[615] Writing around the same time, Philip noted that:[616]

> "surprisingly little that has taken place in the international oil system during the century can be explained in terms of the exercise of metropolitan power directly upon oil-producing countries … On the contrary, one of the most striking features of the international oil system has been the way in which it has been changed in the interests of the main oil producers."

Whereas the concession system was once staunchly defended, few state actors are willing to take significant steps to impose their preferences anymore. IOCs, though continuing to resist imposition of service contract regimes, are likely to limit coercive efforts in favor of seeking out more competitive opportunities or to rely on persuasion.

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[615] Turner (1983: 68).

[616] Philip (1982: 151).

3.2 Competition: Real and Perceived

As discussed in the preceding chapter, learning and cooperation have historically been inhibited by host country fear over competition. Competitive concerns extend from OPEC members – who not only disagree about production quotas, but even about basic production figures – to as-yet non-producing host countries, who fear giving up advantages to foreign governments by sharing information. Although finite resources and active participation in the market by state-owned companies mean that oil producing countries are undoubtedly competitors,[617] the extent to which competition over upstream equity investment[618] guides petroleum regime choice is highly variable.

In general, investment decisions are driven by company-specific, country-specific, and international factors. Company-specific factors include: the general state of investment budgets, hurdle rates, availability of capital and technology, the investor's existing exposure to a particular country or region, and ownership structure.[619] While governments can offer incentives to address some of these concerns, the only company-specific competitive factor that has a significant influence on petroleum regime selection is ownership. Ownership can be broadly

[617] The level of competition in the oil industry has been heavily studied, but tends to focus on the question of whether or not the industry follows an oligopolistic structure. While an important question and one that has had implications for the global economy, this particular question is not central to the competition that shapes fiscal regime choice.

[618] Debt financing – unless it is in the form of loans to project sponsors – and bonds play a comparatively small role in the upstream segment. Owing to geological risk, debt financing is typically only available for later-stage projects where production has already proven successful, or takes the form of reserve-based lending (RBL), which pools multiple wells over a wide area. While RBL has been expanding, it is rarely available outside of developed countries (UNECE 2008: 26).

It should be noted that the discussion presented here focuses on competition over equity from the oil industry. In fact, risk capital not only has a choice about where to invest geographically, but also sectorally (Ely 1970: 282).

[619] IEA estimates for the past 15 years indicate that Independents and Majors account for roughly half of upstream spending, while domestic and international NOCs make up the remaining half (2016: 148).

divided into privately-held, publicly-traded, and state-owned types, although hybrid forms are also possible. Each of these may prioritize different objectives, including, importantly, reserve booking. Neither national nor privately held oil companies are explicitly evaluated on the basis of Securities and Exchange Commission guidelines for reserve reporting. The valuations of publicly traded companies, on the other hand, can be significantly influenced by this factor, making them highly averse to service contracts. States that expect to rely on IOCs and larger independents risk losing investment to other countries offering PSAs or concessions unless they conform to the same fiscal model. Those that prefer to court national oil companies – for example, countries that are already facing Western sanctions[620] – or expect to rely on niche, private-sector players, have greater latitude in their choices.

Country-specific factors include factors of production,[621] domestic demand and legal structures,[622] which determine the pool of competitors and the extent to which individual countries need to accommodate potential investors. Easily the most significant of these is geology. The physical environment determines the size of a country's reserves, accessibility and cost of production, the quality of crude oil, and ultimately also recovery rates, and plays a significant role in determining a country's competitor group. Outliers in terms of production potential – notably much of the Middle East – are able to succeed in attracting investment in

[620] Examples include Iran and Sudan, which have been inaccessible to Western IOC investment to varying degrees and have therefore been focusing on deals with NOCs from China, Malaysia, and elsewhere.

[621] The most significant factor of production is geology, which covers size and accessibility of a country's reserves, cost of production, quality of crude oil, and potential recovery rates.

[622] These advantages are identified in Porter, who describes four national attributes that determine national advantage: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry (1990: 71). For an extended list of factors that determine foreign direct investment inflows, see also Dunning and Lundan (2008: 325-326).

spite of their use of service contracts. [623] Yet even they are often disappointed with the results.[624] Beyond geology, the legal environment has also played an important role in determining competitiveness: Owing to a reputation for rule of law, developed countries face fewer consequences from altering the fiscal framework,[625] although few have sought to change away from the concession.

Finally, international factors include the supply of investors, the supply of acreage, and oil prices, which, with the exception of prices, have combined to reduce the importance of competition for petroleum regime choice. To the extent that competition has shaped the global pattern of petroleum regime changes outlined in Chapter Three, much of it is driven by these

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[623] This point was made by Ely in the midst of the wave of nationalizations, arguing that "Generally speaking, participation in the concessionaire's working interest is only obtainable, from a negotiating standpoint, when the state has rich competitive mineral opportunities to offer" (1970: 295). Similar statements can be found in Jaffe (2006: 21) and Philip (1982: 152). There are, however, limits to what companies will accept, as discovered by Nigeria in the 1980s. As one report stated, "In 1979 virtually all unallocated [Nigerian] acreage was offered […] Geologically there was much to interest explorers, but the terms were extremely unattractive. Although NNPC described contracts as service/production, it appeared to many of the private companies there was more service than production and that the agreements would not provide adequate access to crude" (OGJ 1/12/1981).

[624] See, for example, the Iraqi case below. Iran has made numerous efforts to develop a service contract structure capable of attracting significant foreign investment, yet its buy-back contracts have consistently proved disappointing.

[625] Cameron and Kellas suggest that OECD countries are in some respects actually more risky for investors, as "governments rarely offer such [stability] guarantees. Yet they appear just as likely to change fiscal terms as those in the developing world" (2008: 2). Moreover, those changes are among the "most pronounced increases in government take" (10). Pointing to specific examples, Broadway and Keen note that, "the UK, for instance, has altered the taxation of North Sea oil activities very frequently, without disturbing investors too dramatically" (2010: 57). The Alberta province in Canada has likewise made fairly frequent changes to its oil and gas laws in order to take advantage of higher oil prices. Aggressive changes, however, will carry consequences for even these countries, both of whom saw steep declines in investment activity when oil prices fell. Reviewing research on governance and foreign direct investment more generally, Dunning and Lundan also observe that good governance is generally associated with higher levels of investment inflows, while corruption deters investment, particularly from companies originating from less corrupt countries (2008: 309-311).

Reputational benefits can, however, also accrue to some developing countries. Reportedly, Russia faced difficulties in attracting investment in the early 1990s because "Many firms and financial institutions prefer to keep investing in traditional oil producing countries with stable legal and economic environments such as the Middle East, Southeast Asia, or the U.S., rather than enter the new and risky Russian oil market, previously closed to most foreign investors" (OGJ 8/2/1993).

international factors. Generally speaking, the more diverse the industry and the larger the number of players, the more potential investors the host government can court and the lower the ability of competition to drive government policy choices. Smaller, niche players, in particular, have given governments more flexibility as they are often more willing to take on more risk and accept less generous terms. [626]

Unlike industry diversity, acreage supply is the direct result of government policy. Acreage is typically made available through bid rounds or solicitations, meaning that there is no constant supply.[627] Individual bid rounds are rarely large enough to change the global landscape, although cumulative effects can be significant.[628] Acreage supply can also be affected by unplanned developments in host countries, including production shut-ins from civil unrest, sabotage, terrorism, and war. [629] On rare occasions, a single country's policy shift can radically redefine industry competition for years, as when the Former Soviet Union liberalized its oil

[626] When initially introducing the PSA, there was some concern in Indonesia that the outcome of the change would be to drive larger, more experienced companies out of the market. Describing the debate in Indonesia, the Jakarta office of the State Department stated that "Claiming that Ibnu's contract formula would be unacceptable to large responsible firms, which at first appeared to be the case, Bratanata [Indonesia's Minister of Mines, who favored full management rights for foreign investors] voiced the concern of many that Indonesia would end up with a bunch of smaller firms, unknown quantities, exploring and developing large areas of up to 65,000 square miles which were likely to be far byond [sic] their capabilities." (AmEmb Djakarta 9/13/1967) As discussed in Part 3.3, the entry of smaller independents and state-backed companies like Eni were critical to undermining the oligopolistic structure of the oil industry and reducing the cost to host governments of nationalizing their industries.

[627] Over 150 countries "make occasionally or regularly acreage available for petroleum investments" using the three petroleum regimes (Van Meurs (2008: 18).

[628] For example, two ongoing or anticipated licensing rounds scheduled for 2016 have attracted significant attention. Re-entering the market after years of sanctions, Iran is expected to aim for 1 million barrels per day of additional production, equivalent to one percent of global production. Likewise, after more than 50 years of excluding foreign investors, Mexico is in the midst of Round 1 of licensing, drawing investor interest in spite of low oil prices.

[629] In Nigeria, attacks by the Niger Delta Avengers caused output to drop from a peak of 2.2 million barrels per day in 2011 to just 1.4 million barrels per day by mid-2016 (FT 5/23/2016), a decline roughly equivalent to the entire output of Azerbaijan. Similarly, the Iraqi invasion of Kuwait prompted not only an embargo on Iraqi oil exports, but also led to the largest oil spill in history and tremendous damage to Kuwait's oil fields.

markets in the 1990s, increasing competition among host countries and prompting liberalization of oil regimes elsewhere in the world.[630] Nevertheless, with daily oil production exceeding 91 million barrels, most events will not be significant enough to limit or expand government choices on a global scale.

Price cycles form the third major international driver of competition. Crude oil prices, which serve as an indicator of the balance between supply and demand of oil production, are central to industry profitability, investment spending,[631] and government budgets. When oil prices are high, companies have an incentive to increase spending in the upstream in order to try to bring on new production,[632] making them more tolerant of comparatively unattractive investment climates. In turn, when prices fall, companies have less capital to invest and are more selective about which projects to pursue. From a host government's perspective, then, the competitive landscape is most favorable when prices are high, often giving rise to resource nationalism.[633] When this extends into petroleum regime changes, this would typically take the form of a shift towards PSAs,[634] and in rare instances service contracts.

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[630] van der Linde (2000: 8).

[631] Oil prices not only influence the amount of money that corporations and governments have available to spend on exploration and production, but they are also tightly linked to the price of inputs: when oil prices are high, companies invest more into the upstream, driving up the cost of services and thereby of investments overall. When prices fall, companies look first to reducing the cost of services.

[632] Historically, it has taken several years between the initial investment decision and bringing online of new production. This has changed with new technologies. The combination of hydraulic fracturing and horizontal drilling has meant that new production in North America can be added within a year, with the consequence that oil supply has become much more sensitive to prices, rendering prices more volatile.

[633] This has led to the observation that "resource nationalism" is tied to oil prices. See, for example, Wälde, who states that "Changes seem most extensive in cases where contracts with host states or their state enterprises were negotiated in times of relatively low oil, gas and mineral prices, in particular between 1985 and 1999" (2008a: 137-138) and also that "The current high point in the resource price cycle facilitates and enables policies of resource nationalism and re-orientation from private ownership to state control" (2008b: 56). See also Vivoda, who states that

Overall, the availability of potential investors is not constant over time or location, just as the relevance of other states' choices can be variable. When competitive pressures favor investors, host countries may find themselves pressed to adopt petroleum regimes preferred by IOCs, only to change them later. In spite of the variability of competition, the rhetoric about its importance appears consistent.[635] It dates back to the earliest years of OPEC[636] and has only been strengthened by the push for greater liberalization in the 1990s.[637] Fear over competition has undermined host governments' willingness to share information,[638] to cooperate in negotiations,[639] and even to maintain production quotas.

"High oil prices have endowed oil-exporting states with increased bargaining power, which has been the main driver behind the resurgence in resource nationalism" (2009: 2).

[634] Although PSAs and concessions can both be altered to be equally favorable to the host government, on average, PSAs give the government a larger take (Johnston 2001) and have a reputation for being more advantageous for host governments.

[635] Author's interviews with energy consultant (December 2014), Washington, DC; oil and gas tax lawyer (June 2015), Houston, TX; oil and gas lawyer (June 2015), New York, NY; and petroleum engineer and economist (July 2015), Houston, TX.

[636] In one State Department memo, the author states that "Complete nationalization of production by one or even all OPEC countries has in the past called "suicidal" by some OPEC members on the ground [sic] that the governments would be unable to refrain from competing with each other" unless full cartelization were achieved (0946). Similarly, Sheikh Yamani of Saudi Arabia was quoted in an interview as stating that "It is our duty as producing countries to be very careful in avoiding the competition-generated injuries; however, this should not mean that we will not enter participation and world markets" (Enclosure 1 to AmEmb Jidda, 2/28/1973).

[637] Even in countries that have not abandoned the service contract regime, the debate about the relative efficiency of national oil companies reveals the importance that is placed on competitiveness. Focusing on the Middle Eastern oil producers, Marcel states that "Competition, rather than central planning, is becoming the objective of governments" (2006: 36).

[638] Author's interviews with former intergovernmental organization member (December 2014), Washington, DC; academic expert on energy issues (June 2015), Skype; member of a non-governmental energy organization (June 2015), New York, NY. Some variation exists in opinions about the extent of government cooperation. One lawyer suggests that there is substantial communication between governments (June 2015, Houston, TX), while two oil and gas consultants suggested that communication varies by region and is common in the Persian Gulf, while being uncommon in Africa and Latin America (July 2015), Houston, TX.

[639] As one memo stated, "In the past, rivalries and differing national interests within OPEC allowed oil companies and importing countries to play the OPEC countries off against each other" (INR/Economic Intelligence Note, 7/9/1971). This was particularly pronounced when governments had no say over the amount of oil that was produced, allowing oil companies to shift production across countries in a time of surplus capacity.

However, even when competition does compel countries to change their fiscal regimes, it is important to recognize that host governments still can choose from a menu of options. Both concessions and PSAs allow for reserve booking and are therefore acceptable to industry. Thus, when competition provides the impetus for regime change, other mechanisms frequently come into play in terms of driving the choice between the two. These might be coercion – which can be amplified by competition when market pressures increase company bargaining power – or they might be learning or emulation. Based on the framework developed in Chapter Two, it is more likely that competition will augment or complement the latter two. In such cases, and contrary to traditional accounts of diffusion, the pressure for change and the source of policy inspirations will both be located in the South. Developing countries are overwhelmingly each other's competitors and are significantly influenced by each other's choices rather than merely by the preferences of the North.

3.3 Patterns in Diffusion by Coercion and Competition

The history of petroleum regimes has commonly been divided into distinct eras that reflect changes in both the competitive and coercive environments in which oil has been produced (in addition to the changes outlined in the preceding chapter). The first such era dates from after the Second World War[640] until the 1960s, when the industry was dominated by a private oligopoly of companies based in the developed world. During this period, coercion and competition supported and promoted the concession system, which was favored by corporate

[640] This start date coincides with Jacoby (1974) and is also used in Parra (2004). Many of the descriptions of the first era are also applicable to the earlier time period. The primary differences lie in the importance of oil in the global economy and the existence of the Pax Americana.

actors. This era came to an end with a wave of nationalism in the developing world, reaching its peak with the oil shocks of the 1970s. This second period saw the development of a new petroleum regime, reduced effectiveness of coercive mechanisms, and market transformations that gave host countries more options in their search for investment. Beginning in the 1980s, there was a shift towards liberalization, spurred on by international organizations and a tighter investment marketplace, once again weakening the position of oil-producing states. Some experts have proposed that the world has entered a fourth era in the early 2000s, reflecting a new resurgence of "resource nationalism," although the competitive conditions underpinning this new era appear to have been short-lived.[641] Both coercion and competition have changed in strength over these periods, but the long-term trend has been a reduction in coercive power, to be replaced by the more diffuse pressure of the market.

3.3.1 Corporate Preeminence

The unquestioned peak of coercive and competitive power in the oil industry (from the company perspective) ran from the early 20th Century until the 1960s. Industry benefited from minimal competition, with only a handful of oil companies active internationally[642] and a vertically integrated industry structure that discouraged new entrants. Home governments

[641] These three eras, along with a fourth era, coincide with Bressand's four "eras of FDI-E" (2009: 118-119).

[642] According to Jacoby, a U.S. Senate investigation found "some fifty" U.S. companies with foreign exploration concessions, but "By dint of ill fortune, bad judgment, or inadequate capital and enterprise, the great majority of these firms had sold their foreign interests or had their properties expropriated. By 1945, only six U.S. companies, other than the five largest, appeared to have any active foreign exploration interests" (1974: 123). This situation had not changed significantly by the 1970s, with Mikesell – writing in 1971 – observing that "Over the past decade, a number of relatively large American oil companies have obtained petroleum concessions abroad, but the bulk of the crude oil reserves and production in the developing countries remains in the hands of five major U.S. corporations (Standard Oil Company of New Jersey, Gulf Oil, Standard Oil of California, Texaco, and Mobil) plus the Royal Dutch Shell Company, the British Petroleum Company, and Compagnie Française des Pétroles. Recently, Japanese and Italian firms have become active in petroleum production in the Middle East" (1971: 9).

actively supported the oil companies, while host governments were generally underdeveloped, with little capital or expertise, and often even lacked full independence or sovereignty. In this environment, host governments had little choice but to be open to foreign investment and signed unbalanced concession agreements. Companies controlled the volumes and prices of oil exports and thereby had great power over economic development. Overall, the strength of the concession system during this era rested on three pillars: company strength, home government support, and host government weakness, all of which amplified coercive and competitive pressures.

The companies' strength during this first era was based in their existing concession rights. They had entered many of the largest producing countries before the oil industry had gained its full importance, before many of the countries had come into independent existence, before there was any knowledge of the resources in place, and with the backing of colonial or interventionist governments. Having already won favorable deals, the companies operated from a position of advantage: they needed to exert their power only to maintain the status quo, not to negotiate for better deals. They were aided in doing so by the vertical integration of the oil sector. The major companies owned most of the global production, transportation, refining, and distribution networks.[643] High capital costs and technological requirements posed significant barriers to entry, and even service companies could not readily replace the Majors.[644] Host

[643] The source of the Majors' initial power is, according to Parra, "a series of largely accidental historical circumstances, [namely that] they happened to be there first with the most." After 1950, they retained power through a combination of control of cheap production and home country support (2004: 68-69).

[644] According to Mikesell, "Large international petroleum and mining firms have acquired something of a monopoly of various skills and techniques, and at least in the past it has been difficult to hire the necessary services from abroad […] Engineers, geologists, and mining and petroleum specialists may be hired for specific tasks; but the experience and the organized teams of specialists required to survey, explore and develop a large petroleum field or a large mine high in the mountains usually can be obtained only from large private international firms or, more recently, from government agencies with similar experience, such as those in the U.S.S.R." (1971: 11).

countries could not easily invite in alternative partners nor could they be certain that they could successfully manage the Majors' operations in the event of nationalization.[645] Competition existed only in a limited sense – until the end of this period, the primary alternative to the Majors was the Communist Bloc.[646]

Although the U.S. government is generally regarded as being more ambivalent towards its oil companies than the British,[647] the foreign policy branches of home governments generally tended to regard their oil companies as instruments of foreign policy.[648] Colonial powers continued to set the laws for many host countries, and even succeeded in doing so after independence.[649] Because the oil companies were so secure in their position, there was little perceived need for government intervention,[650] but in the event of crisis, "the companies and parent governments still worked hand in glove."[651]

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[645] In the assessment of the State Department, countries in which the U.S. and UK companies were displaced would "be lost to the free world" owing to interruption of supplies from "long-term loss of capital and know-how" (NSC Report 138/1, 1/6/1953). The most "successful" of the OPEC nationalizations, such as that of Saudi Arabia, took a phased approach in order to ensure knowledge transfer from the private companies to the new national oil companies.

[646] Competition from the Soviet Union and from Communist China were of some concern to the United States.

[647] Turner (1983: 31-32).

[648] The prevalence of this view in the State Department is supported by internal memos (NSC Report 138/1, 1/6/1953) as well as by similar statements by the Justice Department (Turner 1983: 43).

[649] In the case of Algeria, for instance, there was strong French insistence on maintaining the Sahara Code, which "was a bone of contention between Paris and Algiers for the next ten years" and was not amended until 1965 (Turner 1983: 58).

[650] This is perhaps most obviously expressed in the State Department's gradual reduction in internal expertise and resources dedicated to the petroleum industry (Turner 1983: 56). See also Philip (1982: 100), who quotes Engler: "over the years, the State Department came to accept that the industry had grown up and was now the best instrument for protecting the energy base of the nation. It abandoned its network of petroleum attachés and retained a minimum of independent experts at its command […] the need for direct involvement was no longer assumed."

[651] Turner (1983: 50).

In this environment, host governments had very little bargaining power. With limited capital, little technical expertise, and no independent access to downstream markets, they were unable to take advantage of the post-War demand boom to extract better terms from the companies. With independence, however, came greater hopes of seizing control of natural resources in order to spur development. Until they developed new advantages or the companies were weakened, the consequence for host governments was an "imposed regime."[652] The concession was upheld primarily by private coercion, aided by the implicit threat of home government intervention and a near-absence of competition among the Majors.

3.3.2 Independence, Geopolitics, and the End of Private Oligopoly

The 1960s and 1970s produced dramatic changes in the international system that affected the coercive powers of state and industry actors as well as the role of markets in shaping host government policies. Changes in the cost and acceptability of intervention reduced the involvement of home governments, placing companies on the defensive. Increased competition from new industry actors further undermined their position, leading to a string of nationalizations and renegotiations.

Just as more host countries gained independence, the acceptability of imperialist intervention declined – even though it was frequently still anticipated.[653] This shift was most clearly expressed in the concept of "permanent sovereignty over natural resources," first passed

[652] This argument is made in Rodman who states that that the concession regime largely conformed to Young's model of an "imposed regime," since its rules were enforced by the bargaining power of a small number of vertically integrated MNCs, reinforced by American economic power when necessary" (1988: 7).

[653] During negotiations with Kuwait as part of the OPEC nationalizations, State Department officials found that Kuwaitis expected harsh resistance from the U.S. government, stating that "They apparently had expected some ultimatum or at least strong pressure on them" (Telegram from Under Secretary of State Irwin 1/20/1971).

in the United Nations in 1952. Even without such a change in norms, the cost of intervention became more daunting: not only were interventions expensive, but with the rise of resource nationalism, the number of potential targets also grew.[654] More importantly, as the Soviet Union recovered after the war, host countries could now appeal to an alternative patron. The U.S.S.R. could offer funding, technical support, and military protection, all the while cutting the home governments and their allies off from a source of energy.[655] In light of these concerns, there was a significant debate within the U.S. government – and likely in other home countries, as well – about the most appropriate means to deal with investment conflicts. Although some advocated active intercession,[656] the trend was increasingly for home countries to abandon their role of enforcer of rules in favor of becoming mediators.[657] In rare instances, home governments might

[654] Lipson (1985: 151).

[655] This fear is expressed in numerous State Department cables over the course of the 1960s. In 1960, one report stated that "Soviet interests are furthered by any weakening of the position of the free world oil industry as a whole. The USSR is seeking to increase its influence with respect to petroleum trade and development, and to further the principle of state ownership and operation of the industry – from exploration to marketing" (Memorandum from Stevens, Bureau of Near Eastern Affairs, 4/15/1960). Similar statements can be found in a Draft Record of NSC Action (5/6/1960), a Report to the National Security Council (NSC 138/1, 1/6/1953), and a Draft Memorandum from Deputy Legal Advisor of the Department of State, John Raymond (4/22/1960). Reports from individual countries reveal the same calculations: in Indonesia, the Soviet Union and China were reportedly making "at least vaguely glittering offers" that "undercut" negotiations with American companies. (Telegram from AmEmb Djakarta, 3/9/1963).

[656] One report stated that "It is self-evident that the pursuit of the listed USG goals will require USG dialogue with, and affirmative policy support of, the U.S. oil companies which advocate overseas" (AmEmb Jidda to SecState, 8/9/1971), with another suggesting that novel ways could be found to coerce host countries, including new forms of sanctions (Telegram from AmEmb London 1/25/1972). Contingency plans for the Libyan nationalizations considered responses ranging from making a statement to suspension of arms licenses and freezing Libyan assets, with the caveat that host country reactions needed to be considered (Memo from Deputy Director of Northern African Affairs James Blake to Harry Odell on 6/14/1973 and to David Newsom on 6/14/1973).

[657] This position remained consistent across investment disputes throughout the period: the US government saw its role as clarifying and transmitting company views to high-level host government officials rather than as a negotiator (Telegrams from AmEmb Tehran 1/20/1971). In one instance, the host government even asked the US government to put pressure on the companies in order to reach agreement (Memorandum for the President from Acting Secretary Jon Irwin, 8/3/1972).

even go so far as to demand accommodation by its industry in order to protect broader strategic interests.[658]

Home governments were not the only group that saw a decline in their power over host governments. Following the Second World War, there was a gradual proliferation of companies involved in overseas oil exploration and production.[659] These new companies were typically smaller and not fully integrated.[660] Some were private-sector firms, while others were owned or backed by their home governments. Less concerned about setting precedents for other regions of the world, these companies were willing to accept terms that the Majors found unacceptable.[661] As a result, host governments found that they were able to tighten their fiscal terms and even introduce entirely new contract forms while still finding investors. Tellingly, the earliest PSAs and service contracts were signed with non-Majors.[662] Moreover, once the new regimes or fiscal

[658] Philip, for example, notes that, "At least for a few years after the Cuban Revolution, the US government modified its concern for the short-run interests of its oil companies in order to protect the position of various anti-Communist Latin America governments" (1982: 101). In one memo, the State Department states that "The task of the US, the West, and of the oil companies is to retain continued access to those reserves even if it means losing control over them. If such access requires higher prices or participation arrangements, we should be prepared to accept these changes in present operating arrangements" (Memorandum from Deputy Director of the Office of Northern African Affairs, James Blake to Robert Smith, Deputy Assistant Secretary of State for African Affairs 12/21/1971).

[659] According to Jacoby, this increase in the number of firms was attributable to the increased openness brought about by American hegemony, which contrasted with the more exclusive political approach of the European states, changes in technology that made smaller firms more competitive, growing demand that fueled a desire to seek out new markets, and high rates of return from international production (1974: 123-125).

[660] Non-integrated companies are generally referred to as "Independents." The de-integration of the industry was important in that it vastly reduced the barriers to entry because "Any group capable of exploration and development can enter because there is no worry about "finding a home for the oil"" (Adelman 1995: 269). Furthermore, as the majors lost control of supply chains, they also lost their ability to effectively implement private boycotts or sanctions.

[661] ENI, for example, signed a precedent-setting deal with Iran in 1957, in which National Iranian Oil Company would receive 75 percent of total profits with ENI receiving 25 percent. This deal undermined the 50-50 split that had become the norm after Venezuela's fiscal changes (Engdahl 2004: 100).

[662] The first Indonesian PSA was signed with IIAPCO in 1966. Although service contracts had existed in Latin America previously, the first major service contract was signed between Iran and ERAP in 1957.

terms had been implemented successfully, many of the companies that had originally balked at the changes were forced to return to the negotiating table and accept the new conditions.[663] The end result was a significant reduction in industry concentration: from 1953 to 1972, the Majors' percentage control of oil production in Latin America fell from 81 to 73 percent, in the Middle East from 92 to 83 percent, in Asia from 94 to 71 percent, and in Africa from 92 to 47 percent.[664] The industry moved from "a position of very high concentration in ownership of crude oil reserves, daily production, and petroleum sales in 1953 to a position of moderate concentration in 1972."[665] With the loss of industry concentration, coercion by individual companies gave way to the "more impersonal requirements of the international market," which during this period favored the host governments.[666]

The transformation of host governments' negotiating position produced a wave of "resource nationalism," taking the form of nationalizations along with the development and spread of the PSA. This era spelled the death knell for the "traditional" concession, although modernized concessions that found a more equitable balance of interests were able to evolve through this period. The high point for many host governments was reached in the 1970s during

[663] Not only were such incidents a boon to national pride, but they could be financially advantageous. In Indonesia, Royal Dutch Shell had been the fiercest critic of the new PSA regime and had refused to sign such an agreement, only to return later and provide a signing bonus. As one State Department cable summarizes, "The Shell contract is quite a feather in the cap of General Ibnu Sutowo, Pertamina's president. When other oil companies first accepted the Pertamina "management clause", Shell (along with Standard of New Jersey, Caltex and others) declared that it would never accept it. Now Shell, with its enormous prestige in Indonesia has its dish of crow and leaves a $5 million tip under the plate" (Airgram from AmEmb Djakarta 12/10/1969).

[664] Jacoby (1974: 211).

[665] Jacoby (1974: 298).

[666] See Rodman, who states that "host countries were no longer constrained by the direct coercion of an oligopolistic industry, but by the more impersonal requirements of the international market system … What emerged was a more flexible quasi-regime where the modal outcome was nationalization, or its functional equivalent, accompanied by something less than full compensation and an ongoing contractual relationship for the dispossessed owner (1988: 16).

the OPEC oil embargos.[667] Not only did OPEC members demonstrate their power over prices, but the resulting inflow of capital appeared to obviate the need for foreign capital. For others – particularly those relying heavily on imported oil – the spike in oil prices generated enormous debts that would make it increasingly difficult to self-fund oil development, making them even more sensitive to competitive pressure. Developed countries with oil reserves found themselves regaining the attention of oil companies that had lost their equity positions in the Middle East. The result was a boom in exploration in production in the non-OPEC regions, particularly the United States, Canada, and the North Sea.

3.3.3 A New Wave of Competition

As conservation measures in developed countries took hold and new non-OPEC supplies – including, dramatically, the Former Soviet Union – came into production, a prolonged period of low prices reshaped the international market. Competition became central to industry dynamics, taking place between companies as well as between countries. Coercion by home governments was increasingly replaced by coercion from international institutions, which gained leverage over countries experiencing crisis. Although resource nationalism experienced a resurgence in the late 2000s, the turn in the resource cycle proved short-lived. As outlined in the preceding chapter, oil reform became increasingly technocratic and countries internalized the importance of comparables and league tables.[668]

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[667] As Stevens states, "By 1976, the old-style concession had been swept away; the producer governments had full control over their oil operations and indeed their oil prices" (2008: 29).

[668] Rising complexity could, however, have the effect of slowing diffusion in some cases as governments hired multiple rounds of external consultants and international institutions became involved in decision-making. The fear of unwanted domestic conflicts resulting from making the "wrong" choices could also deter new laws, as discussed in the Iraq case below.

This shift began in the early 1980s, when cash-strapped host governments were forced to "encourage private investment by international companies and to privatize loss-making state enterprises." [669] Countries experiencing debt crises came under additional pressure from international institutions promoting the Washington Consensus and policies of liberalization.[670] Even countries that avoided crisis found their access to international financial markets curtailed by low oil prices, forcing them to rely on equity investment from oil companies.[671] Host government concerns over competition intensified with the opening of the Former Soviet Union to foreign investment, which created an abundance of new investment opportunities.[672] The result was that developing countries increasingly shifted away from the service contract model[673] in favor of PSAs and concessions, rewriting their laws in order to compare favorably to other countries.[674] This shift was initially prompted by necessity, but the logic of competition became

[669] Wälde (2008b: 66).

[670] Van der Linden points in particular to Argentina and Brazil as having liberalization programs "'inspired' by" IMF stabilization programs (2000: 8). See also Stevens (2008a: 35-36).

[671] Stevens (2008a: 36).

[672] Van der Linden (2000: 8).

[673] As reported in the *Oil & Gas Journal* in 1982, "there is movement among some Third World nations away from service contracts because those countries don't have the capital and expertise to maintain development of resources without continuing assistance. And service contracts, along with many contracts involving joint agreements or production sharing with state firms, often aren't attractive enough to whet international operator's [sic] appetite for venture" (1/25/1982).

[674] See, for example, an industry article on Tunisian reforms that occurred in 1985, where "It then became clear to the government that to compete for scarce exploration funds it would have to further improve Tunisia's position in the league table of countries in which oil companies would spend their increasingly precious exploration budgets." (OGJ 12/10/1990). Similarly, writing about Guatemala in 1983, observers describe the "government's move as another example of the trend among countries that are taking significant steps to improve terms and offer incentives to step up oil industry investment in exploration/development" (OGJ 10/10/1983). This trend continued into the 1990s, when numerous North African states revised their contracts. Reporting on Libya, for instance, the IEA emphasized the ways in which reforms "have put the country's prospects on equal footing with others in the world" (OGJ 5/12/1997).

increasingly internalized.[675] Even as countries regained bargaining power in the tight market of the 2000s, the language of competition continued to be used.[676]

Transformations during this period were not limited to the host government side. Low oil prices in the 1980s launched a wave of mergers among publicly-traded firms, out of which emerged the new Supermajors, producing "competition among giants."[677] National oil companies that had benefited in the previous era from exclusive access to oil reserves became increasingly active internationally, competing directly with the private sector and prompting debates about the role of the "New Seven Sisters."[678] Although growing competition among oil companies has given host countries additional flexibility in negotiating contracts, the overall pattern of the final period is one in which – apart from a brief period of host country predominance from 2003 to mid-2008[679] – companies benefited disproportionately from changes in the competitive environment.[680] Individual countries' factor endowments and other features

[675] Focusing on the Middle East, Marcel describes the changing ideological environment, in which a focus on state ownership and central planning gave way to competition as "the objective of governments" through participation in the WTO and other aspects of the "open, market-oriented international system of trading and investment" (2006: 35-36).

[676] McPherson suggests that this transition took place after the more nationalistic 1970s, stating that, "Over time, most countries qualified the straightforward revenue maximization objective by taking into account other classic fiscal objectives, such as containment of exposure to risk, and the need to compete with regimes in other countries to attract investor interest" (2010: 268). The internalization of liberal market ideology and the role of competition has not always fully extended to the population (Marcel 2006: 39). Populist governments in Venezuela and Bolivia thus overruled objections from their own national oil companies in order to reassert control in the name of sovereignty and redistribution (OGJ 12/3/2007).

[677] Van der Linde (2000: 130).

[678] This debate was sufficiently prominent as to enter into popular media rather than being restricted to trade journals. For a discussion, see FT (3/12/2007).

[679] OGJ (9/7/2009).

[680] Speaking of multinational corporations more generally, a similar observation is made by Stopford, Strange, and Henley: "Our conclusion is that governments *as a group* have indeed lost bargaining power to the multinationals as

outlined in section 3.2.2 could give certain some governments greater latitude in their choice of petroleum regime, but competitive considerations remain important even in those cases.

4 Failures of Imposition

As outlined in Section 2 and as further illustrated in Section 3, the opportunities for coercion to drive diffusion are limited to a small set of countries, while the effectiveness of the mechanism has faded over time. Competition, while applying more widely, is less narrowly determinative of outcomes and therefore is likely to be complemented by learning and emulation – shaped by domestic politics – that help direct government choices. Thus, neither competition nor coercion alone can claim to be the central drivers of the transformation global petroleum regimes. Even in most-likely cases, these mechanisms have often proven surprisingly weak. The following two case studies attempt to highlight circumstances in which the they should have been expected to play a role – either because the coercive players were operating at a tremendous advantage or because competition had been a central motivator in the past – but failed to do so. Both countries were mentioned repeatedly in interviews and in trade journals as failures from an industry standpoint and therefore represent high-profile cases of (failed) diffusion. Although neither can offer conclusive evidence of a negative or demonstrate a global trend, the failure of competition and coercion in these cases is an illustration of their relative weakness in the contemporary industry environment.

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the possibilities for collective action have diminished. Intensifying competition among states seems to have been a more important force for weakening their bargaining power than have the changes in global competition among firms" (1991: 215).

4.1 Great Expectations. The Failure of Diffusion in Iraq

Post-invasion Iraq should, in principle, have been an easy case for diffusion by coercion. With foreign troops on the ground, an industry in shambles after years of sanctions and underinvestment, and a consistent message from foreign interests about the need for a business-friendly petroleum regime, Iraq had widely been expected to adopt a PSA regime.[681] Yet, apart from the Kurdish regions acting in defiance of the central government, Iraq has rejected the PSA in favor of the service contract model. Moreover, it has continued to maintain this system even following what some have described as failed or disappointing bidding rounds.

Iraq's oil industry dates back to 1925, when a joint geological expedition of international oil companies[682] entered the country. First oil was produced near Kirkuk in 1927 and production would continue to be pursued jointly by the members of the Turkish Petroleum Company (later to become the Iraq Petroleum Company or IPC),[683] even following independence in 1932. Domination by this foreign consortium – firmly backed by the British and American governments – persisted until the military coup of 1958, which set in motion a process of nationalization. The foreign companies' role had been controversial[684] and generated enormous

[681] As one author writing before the failure of the Iraqi oil law and the rejection of the PSA notes, "the participation of foreign capital and technology in the sector through production-sharing agreements is broadly accepted – indeed, it was a strategic decision that Iraqi technocrats made in the 1990s" (West 2005: 212)

[682] The companies were the five U.S. members of the Near East Development Corporation (Standard Oil of New Jersey, Standard Oil Company of New York, Gulf Oil, the Pan-American Petroleum and Transport Company, and Atlantic Richfield Co.), the Anglo-Persian Oil Company (later to become British Petroleum), Royal Dutch/Shell, Compagnie Française des Pétroles, and a five percent share owned by Calouste Gulbenkian.

[683] Within a year of oil discovery, the parties involved agreed to the "Red Line Agreement," which set out the ownership of the Turkish Petroleum Company (TPC) and included a "self-denying" clause that required all developments in the region to be conducted jointly (Yergin 1991: 203-205).

[684] Some of the controversies include claims that the foreign companies maintained a deliberate policy of under-production and under-exploration in order to avoid competition with their activities in other countries. For an

resentment across the Iraqi population aimed at the companies and the home countries that supported them.[685] In 1960, the new nationalistic and inward-looking government overtly began to resist foreign coercion, becoming a founding member of OPEC and revoking IPC's concession in areas not currently in operation – amounting to a nationalization of 99 percent of Iraqi territory.[686] It founded a national oil company, the Iraq National Oil Company (INOC) in 1964, and nationalized the remaining concession areas over several stages between 1972 and 1975, after which INOC took over full responsibility for the industry. The nationalization was met with "universal enthusiasm" from the Iraqi population and cemented the Ba'ath party's position in power.[687] INOC would maintain its monopoly position until 1987, when Saddam Hussein's government reorganized the oil sector and broke INOC into three subsidiary state-owned companies.

Even prior to full nationalization, Iraq was moving away from the concession model. In 1968, it would become one of the pioneers of the service contract in the region, signing such an agreement (also referred to as an "agency contract" at the time) with the French state-owned oil company, ERAP. Under this contract, ERAP would explore and develop the contract area using

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account of the tactics allegedly used by the companies, see Blair (1977: 80-90). Others included recurring disputes over pricing and the possibility of obtaining a government stake in the company (Open Oil 2016: 14)

[685] Outlining the state of Iraqi opinion as seen in both the foreign and domestic press, Muttitt quotes: "Iraqis are united on oil as perhaps on no other issue," observed the *Financial Times* in May 1961. "The majority Iraqi view is that the oil agreements now in force were concluded by a regime subordinate to Britain and the validity of these agreements is now in question." The Iraqi press put it more strongly, denouncing the oil companies as a "collection of thieves, monopolists and plunderers of the people" (2012: 15).

[686] Open Oil (2016: 11).

[687] Quoting historians Marion Farouk-Sluglett and Peter Sluglett, Muttitt reports that "No action by any Iraqi government since the 1958 Revolution was greeted with such universal enthusiasm, and the Ba'ath was able to live off the moral capital generated by this act for years" (2012: 18). Jaffe similarly emphasizes the popularity of nationalization for the current political climate (2006: 8), as does Mahdi (2007: 12).

its own funds, in return for "guaranteed sales at an agreed price of 30 per cent of the quantities (of oil) discovered and produced and not set aside as national reserves."[688] Iraq's national oil company would maintain ownership of the oil produced at the well-head.[689] Following nationalization, the service contract would be the only form in which foreign companies could participate in the Iraqi oil industry.

The service contract regime was maintained throughout the Iran-Iraq War, the Gulf War of 1991, and most of the sanctions period. During this time, the cost of war, the loss of revenues from exports, and chronic underinvestment led to a deterioration of Iraqi oil facilities and several steep drops in oil production, as depicted in Figure 18. The world's fourth-largest oil producer in 1980, Iraq proceeded to struggle to maintain itself among the world's top producers for much of the next two decades.[690] Seeking to revive its oil sector and win Russian support for lifting the sanctions, in 1997, the Saddam Hussein government signed a PSA with Lukoil to develop the supergiant West Qurna oil field. The contract was eventually canceled by Hussein's government and was later again canceled by the new Iraqi government, prompting official protests from the

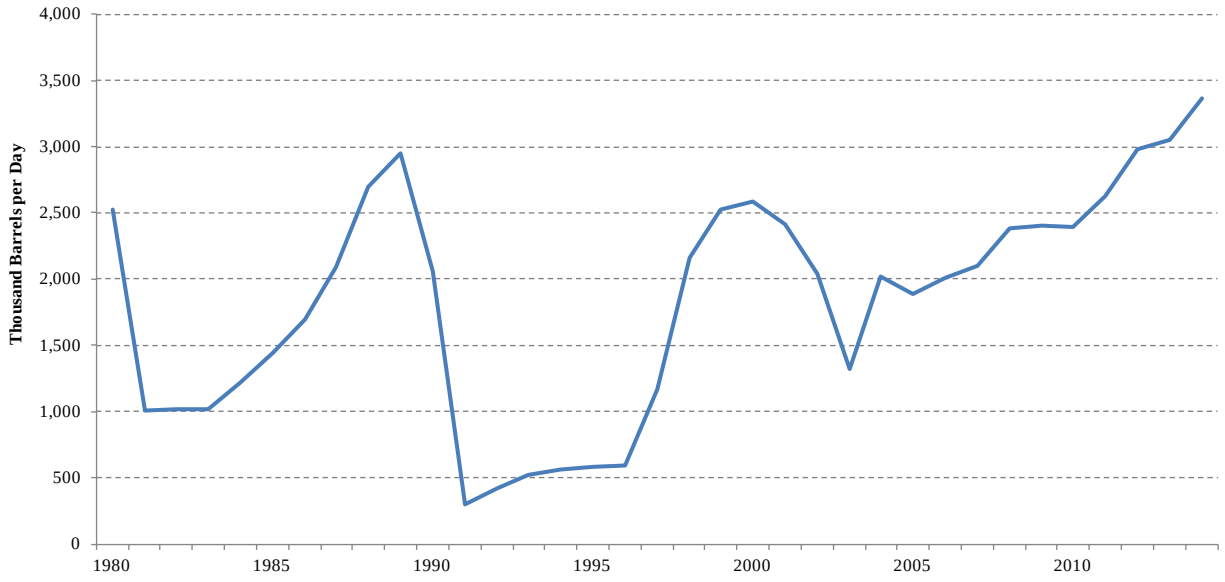
[688] In the event of commercial discovery, the money spent on exploration would be "recoverable as an interest-free loan" but would be non-recoverable if the discovery was non-commercial (Hossain 1979: 165).

[689] Describing the way in which this differed from existing concessions, Hossain cites Montel (1970): "In the legal field the difference can be summed up in two particular points: the ownership of the oil and installations which in concession-type contracts belong to the company, has been recovered from the operator in the agency-type contract … From the economic point of view the differences are more notable because each system starts from a completely different conception. In the concession-type contract the company is a contractor in the broad sense of the word, which finances, produces and sells for its own account and only owes to the state the taxes applicable to its activities. By contrast, in the agency-type contracts, the general contractor is separately a financier who loans capital, a broker who sells a part of the production at the market price, and an operator who is paid in part at cost price for his services and in part by means of a right to buy a proportion of the oil produced at an agreed price" (1979: 167).

[690] In spite of its enormous reserve base, from the period 1980-2003, Iraq ranked among the world's top ten producers only seven times. See EIA (2017).

Russian governments and threats to revoke a debt-forgiveness deal.[691] A PSA was also signed with CNPC in 1997, but the contract was converted into a service contract in 2008.[692]

FIGURE 18. IRAQI OIL PRODUCTION, 198-2014



Source: U.S. Energy Information Administration

Following the U.S. invasion in 2003 and Saddam Hussein's removal from power, there was widespread anticipation of Iraq's reentry into the world oil market. Iraq was conceived of as a "clean slate" that could adopt policies without worrying about resistance from domestic vested interests.[693] Consequently, not only did some expect that, "if things go as planned and

[691] The Lukoil deal entailed a signing bonus of $10 million and would have given Lukoil 9.6 percent of the field's output, which was expected to reach 1 million barrels per day within four to five years of development. See NYT (11/4/2007).

[692] Jiyad (2013: 451).

[693] According to the head of Baker Botts LLP's oil and gas practice, David Asmus, "As Saudi Arabia has shown, it's sometimes very hard to liberalize oil and gas markets when entrenched groups in the country benefit from the old system. What has happened in Iraq is that the old system has been thrown out, and they have an opportunity to start with a clean slate" (OGJ 6/30/2003). Reflecting a similar position, Marcel quotes a Saudi oil executive as stating

contracted, Iraq will become a major contributor to the world petroleum market; a magnet for foreign investment through the involvement of international oil companies, specialised service companies and other related activities,"[694] but its choices could also set in motion fiscal changes throughout the region.[695] At the same time, there was also much scrutiny and suspicion: many observers claimed that the U.S. had mounted its invasion precisely in order to seize Iraqi oil and expected to see sweetheart deals for American oil companies.[696] Combined with a troubled security environment, this situation led to years of uncertainty over the nature of reform, including Iraq's ultimate choice of petroleum regime. Throughout this process, it was evident that both coercive and competitive pressures strongly favored the production sharing agreement. Although concessions would have been met with enthusiasm from foreign companies and their home governments, this system was widely viewed as infeasible from a political point of view.[697]

The coercive potential of the U.S. government is perhaps obvious. Although highly sensitive to any charges of impropriety[698] – whether from Iraq, the international community, or

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that, "Of course, oil has become so political that you can't touch ownership of oil. But if we were all starting over like the Iraqis, we might consider it rationally like the right thing to do" (2006: 47).

[694] Jiyad (2013: 445).

[695] For example, shortly after the invasion, one journal reported that lawyers "advise clients to evaluate corporate business objectives for the entire Middle East, suggesting that Iraq's emerging policies could prompt neighboring countries to revamp their own foreign investment policies regarding the oil and gas sector" (OGJ 6/30/2003).

[696] According to Coll, a State Department planning body noted in 2003 that either privatization or PSAs could "engender opposition from those who see this as selling out to foreign oil companies" (2012: 232).

[697] Behn notes that "while many oil-consuming nations would like to see the oil sector in Iraq fully privatized, the citizens of Iraq would like to deny almost all FOC [foreign oil company] participation" (2007: 10).

[698] As West states, "The United States is very sensitive to the charge that the invasion was to seize, or at least control, Iraqi oil. U.S. policy emphasizes that the Iraqis must control the petroleum sector" (2005: 213). Moreover, a report by the Congressional Research Service suggests that the U.S. Government's concern is not just reputational, but strategic. Should U.S. positions inflame Iraqi attitudes, this could undermine U.S. military and economic goals

its own population – the U.S. had at its disposal a wide range of tools to influence decision-making. First, although the U.S. did not use its position to seize control of the Iraqi policy-making apparatus, the mere presence of U.S. troops on the ground could be perceived as an implicit threat and thereby influence Iraqi decision-makers.[699] Similarly, as a major funder of Iraqi reconstruction, both directly and through international organizations like the World Bank, the United States also possessed economic leverage over Iraq,[700] and might have made that aid conditional on specific types of reform. Second, unlike its military or economic leverage, which acted only through their presence rather than through any deliberate act, the U.S. government also hired international advisors to work with the Iraqi government to reform its oil sector. These consultants, by favoring private sector participation in their reports,[701] likely gave the impression that the U.S. government endorsed the PSA regime.[702] It should, however, be noted that – to the best of the author's knowledge – no such government recommendation was made in Iraq,[703] and that the coercion even in this case was only implicit.

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in the country. Specifically, "the terms and conditions of international participation are likely to remain highly controversial, with powerful Iraqi interest groups taking opposing positions. The public positions that Members of Congress and Administration officials take on each of these questions may influence Iraqi attitudes towards the remaining U.S. presence in Iraq, toward Iraq's proposed legislation and investment arrangements, and toward each other" (Blanchard 2010: 14).

[699] This point is made by Muttitt, who states: "But when a country is at war and occupied by foreign troops, where does advice end and coercion begin?" (2012: xxxii).

[700] For a summary of U.S. activities in support of Iraqi reconstruction, see the State Department Archives (Department of State 2006).

[701] See the discussion of the BearingPoint paper for USAID below.

[702] One particularly critical view argues that the Coalition Provisional Authority "tried to ensure policy oversight via the placement of senior IOC executives (like Phillip Carroll, former CEO of Shell Oil USA) as advisors to the Ministry of Oil" (Frentzou 2008: 12).

[703] In contrast, the administration had endorsed the PSA for use in Russia, as noted by Coll, who states that, "It was unusual for an American president to put his name behind a particular contract genre, but unlike in Iraq, the Bush administration had decided that American foreign policy would embrace and promote the direct ownership of Russian oil by U.S. corporations" (2012: 259). Although the U.S. does not have appeared to endorse the PSA in

The private sector, on the other hand, engaged in behaviors more explicitly consistent with coercion and competition as described above. First, U.S. company lobbyists met directly with Iraqi government officials to encourage passage of an oil law that employed PSA model. In one meeting with Iraqi minister of oil Shahristani, lobbyists reportedly advocated for PSAs and "stressed that certainty and consistency in laws and stable taxing regimes are important."[704] Lobbying efforts were also directed at the U.S. government to encourage the adoption of the PSA model.[705] Thus, in direct communications with the Iraqi government, companies advocated for a particular petroleum regime that would – above all – meet their requirement to book reserves. Second, acting more indirectly, oil firms and Western industry experts writing on the reconstruction of Iraq continued to reinforce this message to the public – including Iraqi policy-makers. Experts revealed not only a preference for PSAs, but described them as a necessity for themselves and for Iraq. Numerous studies were published – funded by think tanks and even commissioned by the U.S. government – that strongly advocated for this system. One study by the International Tax & Investment Center (ITIC) in Washington, DC, for instance, concluded that the PSA was the most appropriate fiscal format for the new Iraqi government.[706] It determined that a failure to permit foreign equity participation would require the government to fund all rehabilitation and implied that PSAs would be more efficient and flexible than the

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Iraq, its officials did repeat many of the talking points of industry. Thus, one official reportedly told Iraqis, "You lack capital, you lack technology, and your workforce needs to be reeducated. You have to offer some incentives to allow the companies to come in. Of course, the whole issue is booked reserves" (Coll 2012: 565).

[704] Session minutes as quoted by Coll (2012: 560).

[705] Coll states that, "Initially, after the war began, ExxonMobil and other major American oil companies pushed the Bush administration to persuade Iraq's government to adopt production-sharing agreements or other contract terms that would allow private oil companies to book Iraqi reserves for Wall Street" (2012: 565).

[706] OGJ (11/8/2004).

alternative of state ownership. A similar conclusion was drawn by a study released by the Baker Institute of Public Policy, which highlighted the difficulties of self-financing as well as its potentially adverse consequences.[707] Similarly, a study entitled "Options for Developing a Long Term Sustainable Iraqi Oil Industry" developed by BearingPoint for USAID in 2003, though not ruling out the possibility of self-financing, appears to favor a PSA regime. The authors indicate that the state-owned option "would tend to limit future production levels to at-or-just-above pre-war levels" and would also require "tough and potentially controversial decisions" in order to ensure sufficient funding.[708] A PSA, on the other hand "has proved the most successful way to attract IOC investment to expand oil productive capacity significantly and quickly."[709] Beyond emphasizing the importance of ensuring the competitiveness of the Iraqi petroleum regime,[710] the authors also suggest a risk of punishment from making a different choice. Specifically, the authors suggest that, in the event that a self-financing strategy (i.e. service contract regime) requires the government to pledge petroleum asset streams, Iraq may be precluded from receiving IMF or World Bank assistance in its debt rescheduling.[711] A common theme thus emerged that suggested that, while the Iraqi government should make whatever decision it

[707] On the positive side, self-financing would facilitate cooperation with OPEC quotas. At the same time, it is likely to increase dependence on the oil sector and sensitivity to oil price movements (Jaffe 2006: 20).

[708] BearingPoint (2003: 4).

[709] BearingPoint (2003: 50).

[710] BearingPoint (2003: 53)

[711] The rationale behind this argument is that "It is likely that any substantial role of the World Bank and IMF in Iraq's reconstruction will be accompanied by their "negative pledge" requirement: an agreement that limits the government's ability to pledge oil production or related assets as security for foreign loans. If such a negative pledge requirement is a barrier to MLA involvement, and given the unsettled business climate in Iraq, the probable lack of unsecured external debt financing for oil rehabilitation and expansion would therefore limit the country's investment options to its own cash flow or equity from private investors" (BearingPoint 2003: 78).

perceived to be in its best interest, the PSA was the superior option in that the alternative could deter investment and carry substantial costs.

This position did not, however, go unchallenged, either in the United States or in Iraq. A common rejoinder has been that Iraq is not comparable to the types of countries that utilize PSAs, which have "been most effectively used in small, poor developing countries with potential oil reserves."[712] Iraq's most appropriate reference point, in this view, should be the world's other top reserve-holders, such as Saudi Arabia, Iran, and Kuwait.[713] These critics suggest that the PSA would constitute a political deal or sell-out designed to "strengthen US allies in Iraq."[714] Another common critique is that the PSA effectively amounts to privatization,[715] a position that appears to assume that formal ownership is mere symbolism.

Diffusion of the PSA to Iraq thus appeared to be strongly supported by coercion. Although much of the public discussion centered on the need for Iraq to be "competitive," the competition mechanism was less prominent in this case. The Iraq invasion coincided with a

[712] Behn (2007: 7).

[713] Thus, for example, Behn suggests that "this high risk, high reward model [PSA] may not apply to the sophisticated and developed oil economies of the Middle East as oil in Iraq is not only known, but has been significantly surveyed" although he qualifies this suggestion by pointing to the political risks associated with investment in Iraq (2007: 7). Abboud similarly argues that "There is no logical economic rationale for entering into an agreement model that was initially developed to attract investment in countries with little known reserves, if any. The PSA model is, thus, inappropriate for revitalizing Iraq's oil industry since, first, it will deflect billions of dollars of oil revenues away from the Iraqi government, and second, that it represents a loss of domestic control over oil production" (2009: 437). This view is echoed in statements made by former Iraqi oil ministry employees and former Iraqi oil minister Issam al-Chalabi, as reported in Al Jazeera (5/8/2007).

It should be noted that this response typically only refers to countries located in the Middle East and North Africa, and overlooks the fact that Venezuela, Canada, Russia, and Nigeria – all of which use concessions or PSAs – also are among the world's largest reserve-holders. When considering the world's largest oil producers, the proportion of countries not relying solely on the service contract rises even more.

[714] See Janabi (2007).

[715] This view is expressed by Mahdi, who states that, "Although officially denied, this [the Iraqi Oil and Gas Law, which allows for PSAs] is a strategy of assured but gradual privatization of the entire industry in all stages" (2007: 14-15).

tightening in global oil markets, reflected in a steep rise in oil prices. During the period that Iraq was debating its petroleum regime, resource nationalism was on the rise elsewhere in the world, demonstrated by nationalizations of oil projects and even entire industries in Bolivia (2006) and Venezuela (2007). Moreover, even as experts urged Iraq to offer terms comparable to those in similar countries, it is – in spite of its security situation – something of an outlier. Not only does Iraq have the fifth-largest proved oil reserves in the world, but these reserves are remarkably cheap to produce and come in the form of supergiant fields at a time when there is an "apparent dearth of high-class exploration opportunities."[716] Adding to these competitive advantages for Iraq, its reforms also coincided with the apparent rise of national oil companies.[717] Less interested in reserve bookings, these companies, who were among the first to be awarded contracts in Iraq's new licensing rounds, reduced market pressure on Iraq to conform to the preferences of Western oil companies.

In spite of the efforts of the U.S. government and international oil companies, the actual outcome did not coincide with their preferences. To begin with, Iraq has still not enacted a national oil law. Although a Federal Oil and Gas Law that might have allowed for PSAs[718] was

[716] Quoted from WoodMackenzie in *Oil and Gas Journal* (2/6/2006) .

[717] See, for example, a series of studies by the Baker Institute for Public Policy on "The Role of National Oil Companies in International Energy Markets" released in 2007, Stanford University's Program and Energy and Sustainable Development's series on National Oil Companies, with publications beginning in 2007, and a UNECE study on sustainable energy development focusing on the emerging role of national oil companies, published in 2008.

[718] Some readings suggest that the proposed oil law would allow for contract structures similar to PSAs (Behn 2007: 13-14). In fact, Jiyad argues that the service contracts signed in the absence of the law do share some characteristics of PSAs, although notably not the ownership features. Those similarities include "the long duration; the privileges of first/exclusive rights; the payment of a signature bonus; the R-factor as a sliding scale remuneration fee; and restrictions on sovereignty through consensus-based decision-making within the joint management committees" (2013: 463). One account indicates that PSAs were explicitly referenced in an earlier draft, but the term was removed following objections from such groups as the General Union of Oil Employees (Mahdi 2007: 19).

proposed in February 2007, it met political resistance and neither it nor its subsequent drafts have been passed into law.[719] The failure to implement a national law has presented a number of challenges to the government and international oil companies, even if it has not prevented either the federal government or the Kurdish Regional Government (KRG) from signing contracts with foreign oil companies. Nevertheless, Iraq has proceeded with several licensing rounds, all of which have adopted a service contract model. The first of these rounds was launched in 2008, initially attracting 140 applications, but ultimately only awarded one field that had received only two bids involving four companies. A significant sticking point for potential investors was the maximum per-barrel fee offered by the government, set at $2. Both bidding consortia exceeded this amount in their initial bid, with the ExxonMobil-led consortium bidding $4.80 and the BP-led consortium offering $3.99 per barrel. The award was not officially made until 2009, following bilateral negotiations.[720] Subsequent rounds took place in 2009, 2010, and 2012, all utilizing the service contract model.

Contrary to the Iraqi federal government, the KRG has adopted a PSA regime, formalized in 2007 when it passed a regional oil and gas investment law. Although the KRG was exposed to the same debates as the federal government and may have been influenced by coercion and competition, this is somewhat debated. Experts have suggested that the Kurdish choice was driven primarily by domestic political considerations, namely the desire to secure high-profile Western oil companies as investors in order to win international allies and thereby cement its

[719] For a detailed critique of the specific terms of the law, see Jiyad (2008).

[720] OpenOil (2016: 71-72), Republic of Iraq Ministry of Oil Petroleum Contracts & Licensing Directorate (June 30, 2009). *Iraq's First Petroleum Round Rumaila Contract Area – Bidding Results*. An analysis of the terms offered in the licensing round as compared to a hypothetical PSA suggested that the service contract was, from a financial standpoint, more favorable to the Iraqi government than the alternative (Merza 2009).

claims to autonomy.[721] As of 2013, the Kurdish government had signed 48 PSA, covering some of Iraq's most attractive fields. Although major investors had initially been deterred by a federal government threat to blacklist any companies that signed PSAs due to their alleged illegality, signatories now include ExxonMobil, Total, Gazprom, Sinopec, Repsol, Chevron, and Hess.[722] This may be attributable to the superior terms of the KRG PSAs compared to the service contracts offered elsewhere in Iraq.[723]

Ultimately, the Iraqi case reveals the limits competition and especially coercion. While the Kurdish regions did reflect foreign preferences, the decision of the Iraqi federal government to reject the PSA – in spite of years of lobbying and advice from the international community – ran directly contrary to expectations. Informed by domestic public opinion, Iraq instead chose to follow the path of neighboring OPEC countries, adopting the service contract even at the risk of losing urgently needed investment.

4.2 The Cautionary Tale. Brazil's Resistance to Corporate Preferences

Whereas the Iraqi case appears to exemplify a case of failed coercion, Brazil's most recent petroleum reforms conform to a failure of competition to deter changes unwanted by industry. This failure follows earlier successful instances of diffusion by competition and coercion, and – as in the Iraqi case – demonstrates the significance of domestic politics in

[721] This view was expressed by Kurdish President Massoud Barzani after ExxonMobil signed PSAs for six blocks in the region, which he compared to "the equivalent of ten military divisions" (OpenOil 2016: 111).

[722] Jiyad (2013: 465), OpenOil (2016: 31).

[723] According to OpenOil, "From the perspective of IOCs, the technical service contracts offered in the south are increasingly seen as less attractive than the production sharing contracts (PSCs) offered by the KRG to the north," although foreign national oil companies may be more willing to trade the stability of service contracts for the risk of the PSAs (2016: 93).

mediating the effects of international pressures for diffusion. In this case, a relatively nationalist government responded to a significant shock in the supply of domestic reserves, incorrectly interpreting it as changing Brazil's group of competitors. Although Brazil's choice of a dual regime combining PSAs and concessions is consistent with the expectations of the theoretical framework developed in Chapter Two, its choice came in spite of rather than because of strong international competitive pressures and appears consistent with regime change by emulation.

Early Brazilian oil history is marked by an activist role for the government. Even as Brazil's exploration attempts (undertaken under an inherited concession regime)[724] were largely unsuccessful, the government set up a department of oil exploration and sought to promote Brazilian private enterprise.[725] By the 1930s, animosity towards foreign investment led to cancellation of foreign concessions.[726] Not long after, Vargas's Estado Nôvo corporatist dictatorship passed a nationalist constitution that barred foreign ownership of oil companies.[727] Apart from brief efforts to restore a role for the private sector in the 1940s, resource nationalism continued to escalate, led by a campaign under the slogan of *O Petróleo é Nosso* ("The Oil is Ours").[728] The American government allegedly responded by using "every possible pressure" to

[724] Brazil developed under civil law, whereby the subsoil is reserved to the Crown, and asserted its ownership again in the 1934 constitution.

[725] Smith describes this department as "created to remedy the deficiencies of private enterprise" (1976: 11). He likewise describes a strong sense of "nativism on the part of the federal government: minerals in general, and oil in particular, were to be sought exclusively by Brazilians or not at all" (12).

[726] Smith (1976: 21). Foreign companies were mistrusted and there were rumors that they had kept secret large oil finds in order to buy up the areas (26).

[727] Smith (1976: 33). Along with these efforts, Vargas established a secret commission on oil policy that produced the National Petroleum Council, which extended state control, but fell short of a monopoly (Randall 1993: 9).

[728] Smith argues that the campaign was so powerful "that it had removed the possibility of foreign participation in the development of national oil resources' (1976: 77).

try to maintain the concession system,[729] but in spite of these attempts at coercion, Petróleo Brasileiro SA (Petrobras) was established as a national oil monopoly in 1953, transitioning Brazil to the service contract regime.[730] By this time, the country's oil industry was still largely undeveloped, producing fewer than 2,000 barrels per day and continued to experience underinvestment, owing largely to government policies.[731] With relatively few attractive onshore reserves, Petrobras focused its attention on developing technology and expertise overseas.[732] Following Brazil's first major offshore oil discovery in 1974, the military government attempted to bring in private investment through risk contracts, although these were again banned in 1985 in the wake of Brazil's transition back to democracy.[733]

After a severe financial crisis, the country's oil sector was fully opened to private sector participation in 1995, under Fernando Henrique Cardoso. In an effort to spur domestic production, Brazil's Congress passed Constitutional Amendment 9 in order to allow private firms – both domestic and foreign – to participate in the upstream. The Petroleum Law passed two years later formally adopted a concessions regime, which was implemented when Brazil

[729] Gledhill (2011: 185) reports that U.S. efforts included "bribery of deputies and senators."

[730] Support for the Petrobras bill came from multiple parties – it was introduced by the Brazilian Labor Party, with a similar proposal put forward by the liberal National Democratic Union, and support provided by a substantial portion of the military. Opposition for Petrobras fell away as a result of President Vargas's suicide note, which "blamed an underground campaign of international and national groups that had tried to prevent" its formation (Randall 1993: 10). Vargas's suicide note had the effect of "burn[ing] Petrobras into the national consciousness" and turning it into "the most durable symbol of Brazilian sovereignty" (Mares 2011: 27, citing Kingstone). The nationalization was not fully completed until 1964, at which point the existing contracts were expropriated (Mares 2011: 26).

[731] These policies included domestic price subsidies that caused imported oil to be sold at a loss. Low levels of production were also partially attributable to the fact that the majority of Brazil's oil reserves are located offshore and it took Petrobras some time to develop the expertise necessary to pursue their development (UNECE 2008: 33-34).

[732] UNECE (2008).

[733] Mares (2011: 27).

held its first licensing round in 1999.[734] Said to be inspired by Norwegian and British licenses, Brazil's terms were among the most attractive in the world, "surpassing traditional targets for investment such as Canada, the USA and the UK."[735] Even with oil prices at their lowest point since 1973, the competitive terms offered in this round attracted interest from 58 companies (of which 14 were bidders), including many of the world's largest oil firms.[736] Brazil continued to hold licensing rounds annually until 2008, following a highly transparent sealed-bid auction process.[737] Brazil's regulator launched all of its rounds with international road shows and developed its offerings in consultation with industry.[738] These efforts in support of the concession system appear strongly consistent with diffusion by competition, combined with some degree of learning from other countries with large offshore oil sectors.

Overall, while participation Brazil's concession licensing rounds has varied based on the types of blocks on offer, the pattern has been one of transparency, stability, competition, and participation by companies of all sizes. Since adoption of the concession regime, investment into exploration and production has "substantially increased" while still maintaining state control

[734] Brazil had passed a Concessions Law in 1995 already that was not specific to the industry, but until a Petroleum Law was passed, state intervention remained a significant concern for potential investors (Mares 2011: 29).

[735] De Sa Ribero (2009: 140-141).

[736] The full list of bidders is: Amerada Hess, BG, BP, British Borneo, Eni, Esso, Enterprise, Kerr-McGee, Mobil, Petrobras, Shell, Texaco, YPF, and Unocal. Of these, all but BG, Enterprise, and Mobil won concessions.

[737] For a summary of the licensing round process, see Tordo (2010: 74-75).

[738] According to authors associated with Petrobras and Brazil's Institute of Geosciences and Center of Petroleum Studies, "ANP adopted the practice of getting companies' feedback through public hearings, so the concession contract clauses and regulations could better reflect companies' international experience and expectations in petroleum exploration, production and commercialization in the Brazilian market" (Rodriguez and Suslick 2009: 11).

through regulation and maintenance of a large role for Brazil's national oil company.[739] Regulators have been highly cognizant of developments elsewhere in the industry, shaping the choice of concessions and causing the country to tailor its offerings to achieve high levels of international interest.

In 2007, Petrobras once again made a major oil discovery. The Tupi field in Brazil's pre-salt basin ranks as the largest single discovery in the Americas since Mexico's Cantarell field in 1976, and was hailed as a "passport to the future" for Brazil.[740] Estimates of the size of Brazil's pre-salt basin vary, but range from doubling its reserves to 31 billion barrels to placing Brazil in the same category as Iraq.[741] Beyond its implications for Brazilian oil exports, production from the pre-salt areas are hoped to spark significant technological innovation and an expansion of the domestic petroleum supply industry.

[739] Tordo (2010: 78). De Oliveira reports that, from 1997 to 2007, oil production rose from 316 million barrels per year to 669 million barrels, compared to flat production levels elsewhere in Latin America. He also reports that royalties from 1998 to 2007 totaled R$39.4 billion and that special participation reached R$38.5 billion from 2000 to 2007 (2010: 42-43). Otillar et al. argue that Brazil has become "a preferred destination for IOCs" that benefits from a more stable political system than its neighbors (2008: 284). Mares similarly describes the 1975-1988 and 1995-2008 environment as "very successful" (2011: 34).

[740] Chauhan et al. (2014: 1). Declarations by President Lula da Silva reflected a view "that Brazil had found a path to eradicate poverty" (de Sa Ribeiro 2009: 142).

[741] Magalhães and Domingues (2014: 344).

TABLE 15. COMPANY PARTICIPATION IN BRAZILIAN LICENSING ROUNDS, 1999-2013[742]

	Round										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**9**[743]	**10**	**11**	**PSA**
Year	1999	2000	2001	2002	2003	2004	2005	2007	2008	2013	2013
Expression of Interest	58	49	46	35	18	30	52	74	52	64	11
Qualified	38	44	42	29	12	24	44	61	40	NA	11
Bidding	14	27	26	17	6	21	32	42	23	NA	5
Winning	11	16	22	14	6	19	30	36	17	30	5
- Domestic	1	4	4	4	2	7	14	20	12	12	1
- Foreign	10	12	18	10	4	12	16	16	5	18	4

Source: ANP

At the time of this discovery, Brazil was led by President Luiz Inácio Lula da Silva of the Worker's Party, which possessed stronger inward tendencies than the liberalizing Cardoso government. Reflecting these views and the sheer magnitude of the discovery, Brazil withdrew 41 sub-salt blocks from the 9th licensing round scheduled for December 2007 and interrupted its practice of holding annual rounds until it could reevaluate its fiscal regime. New concessions would not be awarded for nearly five years, harming Brazilian oil output. The cancellation of the licensing round – occurring in a context of rising resource nationalism in Bolivia, Venezuela, and other parts of Latin America – "introduced elements of instability and national preference" that

[742]There have been two concession rounds subsequent to 2013, but data is not available at this time.

[743] Round 8 was suspended owing to a legal challenge brought after ANP limited the number of awards that could be given to a single company.

raised concerns among potential investors.[744] Although the government made clear that any legal changes would not affect existing concessions, investor concerns were exacerbated by confusion over unitization plans for the pre-salt areas.[745] Over this period, the government convened a special task force, which recommended a mixed regime that maintained concessions for the majority of developments and adopted a PSA regime for the more attractive pre-salt developments and other strategic reserves.[746] Its primary justification for the change was that the concession regime was most appropriate for situations with high exploration risk, whereas the subsalt regions had high reserves and low risk, placing it into a different competitive peer group. Countries with similar geological profiles, advocates argued, used production sharing agreements.[747]

The proposed regime change met with both domestic and international resistance. First, the PSA law requires that Petrobras maintain a minimum 30 percent stake in all sub-salt projects. Critics question the need for such special protections for the NOC, which is already by far the country's largest producer.[748] More importantly, given the size and technical complexity of the reserves being developed, the ownership requirement places enormous financial and personnel

[744] De Sa Ribeiro (2009: 142). These uncertainties were likely enhanced by legal challenges that had arisen following suspension of Bid Round 8, described by Otillar et al (2008).

[745] See Mares (2011: 32) on the desire to respect contracts (Mares 2011: 32) and De Sa Ribeiro (2009: 143) and Otillar et al (2008) on concerns over unitization.

[746] Corkey and de Moura (2013: 207). It should be noted that the regime change did not affect the approximately 43 percent of pre-salt areas that had already been awarded under previous concession auctions (de Oliveira 2010: 14).

[747] See statement of Haroldo Lima, former director-general of Brazilian petroleum regulator, ANP, who served on the special committee (Wharton 2013).

[748] BNAmericas (10/9/2009).

demands on the company, risking delays, debt, and inefficiency.[749] Second, by creating a new regulatory agency and changing its petroleum regime, Brazil could undermine its reputation for stability and transparency.[750] This perception was exacerbated by the country's decision to suspend its practice of annual concession licensing rounds in spite of the fact that it could have auctioned blocks in areas outside of the pre-salt basin. Third, by granting sole operatorship to Petrobras, the law's requirements "raise the risk of international investors becoming mere capital donors," with no say over important financial or operational decisions.[751] Fourth, although not inherent to PSA regimes, the new law proposed to create a state development fund that would be financed from oil revenues. The fund would change the distribution of wealth between the central and state governments and was consequently opposed by many local governments.[752] Similarly, experts have complained about Brazil's onerous local content requirements.[753] Finally, numerous analysts have questioned the need for a change in regime to achieve government objectives. Similar revenue objectives could be met with changes to current tax mechanisms, without needing to alter the broader regime.[754] Overall, critics of the law suggested that "Brazilian politicians felt they had finally hit the jackpot and that everything was in their favor

[749] Because Petrobras is required to fund 30 percent of all projects, regardless of their size or projected returns, it is unlikely to be allocating capital in an efficient manner (Vakil and Campos 2013; Costa 2012; Platts 9/4/2013).

[750] Vakil and Campos (2013).

[751] Chauhan et al. (2014: 13).

[752] Reuters (8/6/2009), Costa (2012).

[753] Meyer (2016: 19).

[754] De Oliveira (2010: 63, 76). See also Silva (2010: 53), who additionally points out that some portions of the subsalt will be developed under the concession system, and that reduced complexity would be advantageous under the circumstances, and Singh (2012 Draft Paper: 17).

and that they could dictate the terms to the industry" without regard for the competitive environment.[755]

Upon resumption of new bid rounds, results confirmed that the warnings by companies and critics had been correct. Brazil's first PSA round, held 2013, was widely regarded as a disappointment.[756] The government had reportedly expected participation from over 40 companies,[757] but received only eleven expressions of interest and ultimately attracted just one bid by a consortium of five companies.[758] Industry observers suggested that the terms offered under the PSA were uncompetitive with other countries (implicitly rejecting Brazil's reassessment of its peer group), a situation no doubt exacerbated by the precipitous drop in oil prices since the adoption of the PSA law. One energy lawyer described the regime as so "atrocious," that "Brazil is out of the running for some of the private investment dollars that people are going to be spending in the next few years."[759] Less dramatically, another observer indicated that the choice of PSA placed Brazil in "a position that may be proven to be disadvantageous."[760] The failure of the PSA licensing round, high debt loads assumed by

[755] Statement by Norman Gall, director of the Fernand Braudel Institute in São Paulo, as cited by Wharton (2013). A different analysis suggests that, rather than hubris, the change represented a more deep-seated change in the government's development strategy: "The newfound oil wealth has altered the political mentality of actors, in which the old model of relying on foreign investments for economic dynamism in the oil sector was deemed obsolete" (2012 Draft Paper, 2).

[756] As Chauhan et al. state, "The reforms have undoubtedly shaped the rate, or rather lack, of progress in the Brazilian upstream sector" (2014: 13).

[757] Meyer (2016: 19).

[758] The winners of the round were Petrobras, Shell, Total, CNPC, and CNOOC. See ANP/SPL (2017) for a summary of the terms of the bids.

[759] FT (3/11/2016), citing Scott Schwind of Jones Day law firm.

[760] Elaborating on this point, Christian Gomez, energy director for the Council of Americas states, "Brazil's competitiveness is not guaranteed. The resources are there. It's just going to take the right policies to get them." (Platts 9/4/2013).

Petrobras in its effort to meet its pre-salt development targets, and an ongoing corruption scandal have led to growing calls for reform of the PSA law. Although still under deliberation, the proposals would remove the requirement for Petrobras participation and operatorship. An earlier attempt at reform even went so far as to try to convert the PSAs into concessions, a move that would be consistent with international market pressures.[761] The incumbent government, however, is tightly tied to the current regime and has responded with fierce resistance.[762]

Ultimately, Brazil's experiences represent both success and failure of the competitive diffusion mechanism. Brazil's earliest reforms revealed a strong inward-orientation among nationalist elites, who progressively nationalized the industry even as it remained underdeveloped. Following economic upheaval, Brazil's elite turned outward, abandoning the service contract regime in the 1990s in favor of the concession. Brazil's new terms reflected not only its risky geology, its lack of regulatory track record, and its ambitions to develop self-sufficiency through investment, but was designed to offer some of the most competitive terms in the region and the world. This emphasis on competitiveness reflected both domestic elite preferences as well as a general movement towards liberalization in international oil markets. Brazil reaped significant rewards in the form of investment and production growth, while still employing a national oil company that was widely perceived as a model for NOC efficiency. Upon making a significant oil discovery, however, preferences of the more inward-oriented government appeared to overtake competition as a motivator for petroleum policy. While Brazil remained outward-oriented relative to the nationalist leaders in its region, its leadership chose to

[761] Stratfor (6/23/2015).

[762] The reforms are particularly associated with President Roussef, who was on the special task force and Chairwoman of Petrobras at the time that the law was passed.

defy market warnings about creating uncertainty and alienating foreign investors, and pursue a limited path of "resource nationalism." Fifteen years after opening its market to private investment, Brazil adopted a mixed system that used a PSA for "strategic" reserves, most notably its newly discovered subsalt reserves. Whereas the concession system had enjoyed considerable success and reportedly even served as a model for Mexico, the PSA reforms are held out by as a cautionary tale.[763] Beyond failing to attract much investor interest, the PSA regime placed considerable financial burdens on Petrobras. Although ongoing corruption scandals may offer an opening for competition to overcome resistance by the incumbent government, this diffusion mechanism failed to prevent the initial regime change or reassert the concession system for nearly six years.

5 Conclusion

The past 75 years have fundamentally transformed the relationships between home governments, companies, and host governments. The erosion of the Supermajors' market power at the hands of the Independents dramatically reduced companies' ability to prevent changes at the level of petroleum regimes. Individual companies still possess the power to negotiate the terms of individual deals,[764] but their willingness and ability to aggressively challenge wide-ranging legal changes is limited. Instead, as in Iraq, companies rely on independent advisors or

[763] Interviews between author and a petroleum tax lawyer (July 2015, Houston, TX) and with a group of three energy lawyers (July 2015, Houston, TX). Similarly, Duncan Wood, director of the Mexico Institute at the Woodrow Wilson Center for Scholars, has been quoted as saying that "The auction [on October 21, 2013] on Brazil's presalt showed Mexicans what could happen in [sic] the process doesn't work" (OGJ 11/4/2013).

[764] The extent of changes resulting from negotiations are difficult to ascertain, as individual contracts are very rarely made public. Numerous individuals interviewed for this study agree that, while model contracts are readily available, the actual deals signed by companies are typically held in secrecy.

directly offer advice to governments to convince them to respond to the market, and choose to walk away in the event that the regime is unfavorable. Although international advice has so far consistently dictated the need to book reserves – translating into learning that supports either concessions or PSAs – the expansion of state-owned companies has the potential to undermine even this fundamental message.

The weakening of coercion has also affected the activities of home governments. Already demonstrating a reluctance to intervene before the events of the 1960s, home governments have typically proven unwilling to involve themselves as parties to investment disputes or policy confrontations. Where coercion is considered, this has usually been reserved for cases in which other strategic interests were at stake.[765] Looking forward, however, the potential for more aggressive intervention has grown as national oil companies expand into foreign countries. Here, investment disputes would involve not just companies but governments. Whether or not they will use all tools at their disposal remains to be seen.

Market competition also appears to be entering a new phase. New technologies like hydraulic fracturing have expanded the production potential of non-OPEC countries, and have created new investment opportunities in developed countries. These technologies have also dramatically changed the time frames for adding new production to the market, increasing price volatility and complicating the process for host governments seeking to change their laws in

[765] Krasner (1978).

response to market upswings. Some analysts have suggested that these new technologies may require the development of an entirely new petroleum regime.[766]

The overall pattern in the oil industry has been one of accommodation: having lost coercive power, companies have sought to adapt to the regimes chosen by host countries, abandoning those with insufficiently attractive prospects and terms. This has led to a magnification of competitive effects. The market, however, has not settled on a single petroleum regime, and current trends are unlikely to create a new consensus. Instead, competition appears to serve primarily as a trigger, forcing host governments to periodically reconsider their laws, at which point learning and emulation, coupled with domestic politics, drive the ultimate regime choice.

[766] In interviews with the author, one lawyer indicated that unconventional production might require a new framework and that China is rumored to be considering such an alternative (June 2015, Houston, TX), while another elaborated that staging of investments and cost recovery issues in unconventional production need to receive additional consideration (July 2015, Houston, TX).

CHAPTER 6: CONCLUSION

1 The Rise of the South

Although the lion's share of the world's oil reserves are located in the developing world,[767] developed countries hold an out-sized place in the industry's history and public perception. The United States and Canada were the first sites of commercial oil exploration and production and remain major producers to this day. The developed world is responsible for a disproportionate share of the world's oil consumption,[768] and is home to many of the technological innovations that have shaped the industry. The most visible[769] oil companies in the world – not just the six Supermajors[770] but also many of the Majors and the largest Independents – are based in North America and Western Europe. Their predecessors, operating under concessions that were implicitly supported by powerful home governments, were responsible for many of the most significant oil discoveries of the last century and set the tone for host government-company relations for generations. Unsurprisingly, the North has also come to be central in narratives about the industry's laws and governance: The overthrow of Iranian Prime Minister Mossadegh and the notorious Venezuelan concessions under Gómez are widely cited examples of home government interventions and corporate imperialism. As this dissertation has argued, however, they are far from representative of the trends in the development of modern oil laws.

[767] According to BP's 2017 Statistical Review of World Energy, non-OECD countries hold nearly 86 percent of the world's proved oil reserves, the majority of which is located in OPEC countries. OPEC's proportion of world oil recedes in terms of actual output, where it accounts for just over 40 percent of oil supplies.

[768] According to BP, the 35 OECD countries account for nearly 48 percent of global oil consumption.

[769] It should be noted that visibility is not necessarily the same thing as size. The largest publicly traded oil companies in the world are dwarfed by many national oil companies on key metrics such as oil reserves and production.

[770] The Supermajors are generally held to be ExxonMobil, Chevron, Royal Dutch Shell, BP, Total, and ConocoPhillips.

Instead, the evolution of control of oil resources and in the relations between governments and countries has been driven largely by the choices of developing country governments. In the 1960s, oil-producing developing countries undertook two major sets of reforms that remade the industry: First, the Arab OPEC members initiated the nationalization of their industries and the adoption of the service contract regime. In doing so, they cut off the international oil companies' supply of equity oil, leading to changing business models and greater receptivity to different types of oil regimes in order to avoid the same fate.[771] Second, Indonesia developed an entirely new form of oil regime that envisioned the state as a partner to private oil companies. The PSA offered shared ownership and control,[772] resolving some of the tension inherent in the traditional concessions that appeared to cede sovereignty to private actors. While the former development is both significant and widely acknowledged for its relevance to key industry actors like Saudi Arabia, Kuwait, Iran, and Iraq, the latter development is in many respects more significant. Whereas fewer than ten countries rely on the service contract alone, nearly half of the world uses the PSA, either on its own or in conjunction with the other two regimes. Both regimes have found solutions to the fundamental political problem of ensuring sovereignty over natural resources while also giving the state a stake in oil operations. Yet only the PSA has done so while maintaining a significant role for the private sector while potentially avoiding some of the pitfalls of the resource curse.[773]

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[771] Rodman (1988).

[772] In practice, operational control typically remained with the company, although control over resources was shared.

[773] Luong and Weinthal (2006, 2010).

2 Dissertation Review

Drawing on both qualitative and quantitative evidence, this dissertation has argued that the PSA's success is attributable in large part to the absence of power hierarchies in the South, which facilitated learning across developing countries that saw each other as peers. Major success cases subsequently underpinned emulation. Collectively, these mechanisms support a view of the South as innovator and agent of change, rather than a victim of foreign imposition. Coercion, which features so prominently in the history of oil and in the popular imagination, may have supported the maintenance of the concession regime in some countries, but does not facilitate the transmission of PSAs or service contracts. Developments in international law and in oil markets have undermined the value of power asymmetries in producing oil regime change, giving Southern ideas the opportunity to expand. Given the choice between two oil regimes of Southern origin, domestic elite preferences determine the ultimate outcome, and overwhelmingly have favored the PSA.

These arguments are made in four chapters organized around the mechanisms of diffusion. Chapter Two fully develops the two-level diffusion framework and its application to the petroleum industry. It does so by conceptualizing each of the four mechanisms of diffusion (coercion, competition, learning, and emulation) in detail, forming the basis for anticipating how each is likely to respond to international and domestic factors (those being power hierarchies and peer group effects in the former case, and elite political preferences in the latter). It then breaks countries into four types (Inward-North, Outward-North, Inward-South, Outward-South), any of which might be a policy exporter or policy importer, and offers a general framework for anticipating which mechanisms are favored under different combinations of exporter and importer countries. It then applies that framework to the case of petroleum regimes in order to

generate testable hypotheses that form the basis for the remainder of the dissertation. Those hypotheses suggest that South-South diffusion has, above all, been fuelled by learning, emulation, and competition, with little to no role for coercion. The petroleum regime originating in the inward-oriented South (the service contract), moreover, is less strongly favored than the petroleum regime of the outward-oriented South (the PSA).

Chapter Three explores global diffusion patterns using original quantitative data. It begins with a descriptive analysis of the global pattern of diffusion, outlining the remarkable expansion of the PSA across nearly all of the world's regions and types of countries. This is followed by tests of the hypotheses generated in Chapter Two using a series of binary and multinomial logistic regression models. These examine the relationship between indicators of each of the four causal mechanisms of diffusion and petroleum regime adoption, accounting for country type. Overall, the analysis does not offer a perfect success rate, but does support several of the major contentions of the theoretical model. First, the results support the argument that learning and emulation significantly shape the adoption choice for all three regime types, revealing that both logics of consequences and appropriateness can favor the spread of developing country ideas. Second, the findings suggest that coercion and competition, which suggest a pattern of imposition (whether from specific actors or an impersonal market), tend to have a less consistent or powerful relationship with petroleum regime choice. Significantly, each iteration of the model strongly supports the contention that country type (North/South and Inward/Outward) has a significant influence on which mechanism of diffusion influences petroleum regime adoption.

Chapter Four centers on learning and emulation, arguing that both of these mechanisms have played a central role in explaining the expansion of the PSA relative to the other petroleum

regimes, revealing their significance in South-South diffusion more generally. It explores the ways in which the two mechanisms can be differentiated through competing logics of consequences and appropriateness, and how those logics apply to the oil industry. Focusing on industry advisors' perceptions, it lays out changes in those logics over time. It explores four major cases of petroleum regime change: Indonesia in the 1960s, OPEC in the 1970s, Russia in the 1990s, and Mexico in the 2010s. Together, these cases illustrate not only how learning and emulation have functioned in practice to support diffusion across developing countries, but also reveal what has happened when those mechanisms have promoted competing outcomes. In those instances – and in the selection process more generally – domestic politics has ultimately played the deciding role.

Chapter Five discusses the remaining mechanisms of diffusion, coercion and competition. It identifies the industry's central coercive actors and their capabilities, emphasizing that their role in the modern industry – captured by the myths of Blood for Oil and corporate imperialism – has commonly been exaggerated. The sources of competitive pressure are also explored, covering international and domestic factors. This is followed by an analysis of the strengths of both of these mechanisms over time, concluding that coercion has been on the wane while competition has fallen from its pre-1970s peak, but has remained high in some cases. The chapter proceeds to an analysis of the Iraqi case, which serves as a dramatic example of failed coercion. This is followed by a study of Brazil, which demonstrates the limited ability for competition to prevent policy change in the face of strong nationalist pressure.

This multi-methods approach follows Lee and Strang's advice for combining pattern-searching and process tracing.[774] In this case, quantitative evidence serves to demonstrate the geographical and temporal extent of diffusion. In spite of limitations to international data it also reveals correlations between the mechanisms of diffusion and petroleum regime adoption that appear to confirm many of the theoretical expectations. Archival evidence and interviews with industry actors with decades of international experience further highlight apparent regularities in the relationship between the four mechanisms and regime type. The final step of narrative case studies further reveals how those mechanisms actually functioned in prominent cases, both historical and contemporary. Together, this approach develops a persuasive picture of how and why international and domestic factors have interacted to empower the South to alter the norms about how to manage investment into the petroleum sector.

3 Three Trends in the Evolution of Petroleum Regimes

Petroleum regime change, however, does not end with the widespread adoption of the PSA. Legal orders are not static creations but evolve and adapt to changing conditions in the world and in host countries. Research on the concession, PSA, and service contract reveal three ongoing or potential changes that are likely to shape the relationship between host governments and oil companies. Those trends involve continued changes in the terms of standard oil contracts, weakening distinctions among the three categories of oil regimes, and the possibility for an

[774] Lee and Strang (2006: 886).

additional revolutionary upheaval in petroleum regimes that could once again initiate a process of global diffusion.

3.1 The Evolution of Standard Petroleum Regimes

Beyond diffusion of petroleum regimes, the emergence of new oil laws and the pressures of resource nationalism have led to significant evolution of the regimes themselves. Early concessions, for example, bear little resemblance to their current incarnations. Concessions written in the first half of the twentieth century covered enormous areas (such as the entire Persian Empire in the case of the D'Arcy concession),[775] had durations of 60 to 75 years (or in the case of Bahrain, 90 years), and offered only "modest" financial returns for host governments through the royalty mechanism, without any income taxes.[776] Even by the time that Indonesia implemented its first production sharing agreement, significant gains had been made by host governments. These included the 50/50 profit-sharing sharing principle, relinquishment of undeveloped territories, and participation.[777] Today, concessions tend to cover a much smaller area, defined as a block, and are much shorter in duration, being limited to a 3-5 year exploration phase and a 15-20 year production phase (frequently renewable at least once).[778] Common provisions include work requirements, local content requirements, and domestic market obligations.[779] Financially, modern concessions have higher royalties – including, increasingly,

[775] According to Cattan, "The area was very large and if it did not include the whole territory of the conceding State, it covered its largest part" (1967: 2).

[776] Cattan (1967: 2-4).

[777] Cattan (1967: 6).

[778] Radon (2005: 84).

[779] Work requirements represent minimal activities that a concessionaire or contractor must undertake and is specified in the agreement. Work requirements might, for example, include drilling a specified minimum of

sliding-scale royalties tied to production levels, income taxes, and signature bonuses.[780] It is also not uncommon for modern concessions to have an option for limited government participation. Taken together, these provisions make concessions economically very similar to many PSAs, although legal and political differences remain.

PSAs have likewise changed over time. Like concessions, PSAs have evolved to ensure greater returns to host governments, but also reflect efforts to increase flexibility in order to accommodate variations in geology and oil prices. This flexibility not only provides an incentive to invest in marginal or expensive offshore fields, but ideally also obviates the need for renegotiation in response to changing market conditions, as financial terms will automatically adjust. Thus, while early PSAs did not use sliding scale taxation mechanisms, they have come into greater use: Sliding scale royalties, for example, are used in countries as diverse as China, Yemen, Chile, and Algeria, while sliding-scale profit-oil shares are also highly common.[781] More recent projects have shifted from volume-based scales to R-factor or Rate of Return-based ones.[782] Other trends include rising cost oil percentages and a reduction of exploration times.[783]

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exploration wells. They were implemented in order to prevent oil companies from blocking off large territories from rivals without developing them. Local content requirements specify that sourcing of parts and labor should seek to reach some minimum percentage of the project, typically subject to their availability and conformity with international quality standards. Domestic market obligations may specify that companies must give host governments right of first refusal for a certain percentage of output (usually at market price) in order to ensure that the domestic market does not experience supply shortages.

[780] Radon (2005: 84).

[781] Bindemann (1999: 48, 50).

[782] These two systems tie taxation to profitability. R-Factor systems "are linked to the payback of an investment (the ratio of cumulative after tax receipts to cumulative expenditures – capital expenditure and operating costs)," while RoR based systems "are linked to the project's return on investment (hence they take into consideration the time value of money and apply when a target internal rate of return has been achieved)" (Tordo 2007: 40).

Both types of system "lower the project specific risk by introducing flexibility in the fiscal package … [making them] more likely to encourage the development of marginal fields, or of complex projects with a long lead time for

Service contracts, too, have exhibited changes, although not always with success. Countries aiming to attract private investment without permitting equity ownership have developed several approaches to attract investment. Iran, for example, developed a "buy-back contract," the first of which was signed in 1995. The buy-back contract is a work-around for the fact that foreign investors cannot own oil. In this case, companies provide capital, expertise, and technology to develop new projects that are transferred to Iran's national oil company upon reaching specified output levels and are paid in-kind for the costs of development and an agreed portion of the profits. These contracts have not been very successful given the difficulties in setting a price or exchange rate for oil and due to the fact that contractors cannot book the oil they receive in payment.[784] Mexico, facing similar constraints on equity participation prior to its most recent round of oil reforms, likewise attempted to develop a service contract that could attract foreign interest. The Mexican contracts provided for the possibility of performance-based bonus cash payments, again preventing reserve booking.[785] The results of this service contract, too, proved disappointing. Countries continue to experiment with different forms of service contract that can meet their own' and their contractors' needs, but a successful form has yet to emerge.

Overall, none of the three petroleum regimes has remained stagnant or unchanged. Markets have evolved dramatically over the past seventy-five years, with a growing number of players, price volatility, changing technologies, and increasingly complex projects. Additionally,

implementation. In addition, the use of R-factor and RoR-based systems normally lowers the break-even price of a project" (Tordo 2007: 30).

[783] Bindemann (1999: 58).

[784] Moors (2017).

[785] Samples and Vittor (2012: 228-231).

both investors and governments have gained experience with negotiations and investment conflicts. Each of the regimes has evolved in ways that attempt to preclude such conflicts in future, whether by incorporating contractual protections or by designing flexible or progressive fiscal structures that respond to oil prices and reduce pressures for renegotiation. Nevertheless, as conflicts continue to emerge, new solutions will develop, leading to potentially radical shifts.

3.2 Mixed and Hybrid Regimes

Recognizing that no single petroleum regime offers the perfect solution for both host governments and investors, more governments are turning towards hybrid and mixed regimes. Hybrid regimes are those which are difficult to clearly classify as one of the three pure types, borrowing elements from one or both of the others.[786] Hybrid regimes have led to some degree of convergence in regime design, as they have sought to pick from the most successful aspects of each other the other types. Countries with mixed regimes, on the other hand, do not try to produce a single ideal regime, but prefer to maximize flexibility by adopting enabling legislation that allows them to use any of the three types, depending on circumstances. In Brazil, for example, concessions are used for most onshore and offshore developments, but PSAs are applied to all new developments involving sub-salt resources. In Russia, concessions are the primary vehicle for oil investment, with the exception of mega-projects involving international oil companies, which have historically been undertaken under PSAs. Other countries using mixed regimes include Angola, Nigeria, Trinidad and Tobago, Malta, and India. Mixed regimes have existed since the 1970s, but have become increasingly popular since the 1990s, with two

[786] Talus, Looper, Ottilar (2012: 186).

prominent countries (Mexico and Brazil) implementing this approach in the past decade alone. In many cases, governments will develop a preference for one petroleum regime and will become *de facto* single-regime systems. Nevertheless, they retain the flexibility to offer different contracts or concessions based on developments in the domestic and international oil industry. Given the political controversy and time commitment involved in passing oil laws, mixed regimes can be an advantage, even if unused.

3.3 Changes in Reserve Reporting

A third potential change in petroleum regimes rests in the hands of the U.S. government rather than host countries. As noted elsewhere in this text, service contracts have historically presented a problem for potential investors because of their inability to book reserves. Reserve reporting, however, is largely an artificial construct developed by the Securities and Exchange Commission (SEC) of the United States. This organization periodically revises the criteria for what can be included in publicly traded companies' reserve reports, with potentially dramatic results. Petroleum reserves are not fixed quantities, but can change in response to new information, advances in technology, and changes in oil prices.[787] In 2008, for example, the SEC made a major revision to its rules of reserve reporting that changed the price benchmark and broadened reserve estimation to allow oil and gas from unconventional production, which had become an increasingly important source of new production in the United States. This change

[787] The full definition by the SEC is ""those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible, from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations, prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain regardless of whether deterministic or probabilistic methods are used for the estimation" (Henry 2015).

encouraged a substantial increase in investment into the U.S. upstream and dramatically altered the reserve profile of a number of independent oil companies.

Changes in reserve reporting need not be limited to considering different types of reserves under the ground. In the early years of the PSA, for example, there was some confusion over whether or not and to what extent the contractor's share of oil could be reported. Lack of petroleum expertise within the organization slowed the decision-making process, but eventually the SEC determined that those reserves were bookable.[788] There is some potential that, with proper consultation among host governments and the SEC, some future form of service contract might be developed that meets guidelines for reserve booking. Such a modification could revolutionize the service contract and dramatically improve its attractiveness to foreign investors. Indeed, there has reportedly been an ongoing effort within oil companies to design a contract that can allow for full state ownership and also permit reserve booking,[789] although such a design has yet to be introduced. In that case, it would be possible for a new wave of petroleum regime change to emerge favoring such a revised service contract.

Together, these trends reveal a range of possibilities for the continued development of oil regimes. In one version, they will continue to evolve or hybridize so as to look increasingly similar, resulting in a return to a single or dual regime system. In another, countries will gravitate towards wide-ranging enabling legislation, allowing them to select their preferred regime type in each bidding round so as to reflect market interest. In the third variant, an existing regime might

[788]Author's in-person interview with international oil and gas consultant (7/22/2015a).

[789] According to Coll, "As far back as the 1980s, after Saudi Arabia nationalized its oil industry, Exxon lawyers had worked on contract formulations that might allow the kingdom to claim full ownership over its oil before its people, while structuring Exxon's position so that, even short of outright ownership, the S.E.C. rules would nonetheless recognize the corporation's right to book reserves for Wall Street" (2012: 573).

evolve – or a new regime will emerge – that will resolve a previously unaddressed host country need. If it does so successfully, learning and emulation – and perhaps also competition – could well lead to a new revolution in oil markets.

4 Directions for Future Research

The research presented in this dissertation not only points to new possibilities for petroleum regimes, but also suggests the potential value of additional research in related issue areas. Three avenues of research appear particularly promising.

First, having provided a set of explanations for why countries choose specific petroleum regimes, I propose that further research is needed to better understand the consequences of those regime choices. Although international development organizations and practitioners have addressed the differences between the regimes and their relative fiscal merits, little is understood about their political implications. Luong and Weinthal's research on the resource curse suggests that petroleum regimes could profoundly shape economic and political institutions.[790] Their study, however, rests on a smaller set of countries and utilizes a different classification system than this dissertation. The data and insights for this project could consequently be used to build on their early efforts to explore the mediating role that petroleum regimes play between oil revenues and outcomes like corruption and democracy. Even on the economic side, there are questions that have yet to be answered. Because PSAs and service contracts were designed precisely in order to redress the perceived imbalance between investors and host governments,

[790] Luong and Weinthal (2006, 2010).

one might assume that they are less prone to renegotiation or replacement. If this is the case, petroleum regime choice could mitigate or exacerbate the tendency towards renegotiation observed by the obsolescing bargain model. By studying the survival rates of petroleum regimes, it may be possible to determine which legal reforms are able to successfully delay the obsolescing bargain.

Apart from the issue of oil regimes, this research also invites further study into the applicability of the diffusion framework to other areas, with the eventual goal of facilitating prediction. One case that would offer a valuable comparison in that it produced an entirely different outcome is that of mining regimes, where PSAs were reportedly also attempted.[791] Yet whereas PSAs succeeded in overcoming company resistance in the oil industry, they failed both domestically and internationally in mining. Apart from studying a failed case, the diffusion framework would also benefit from more extensive testing of other successes. Those could include other South-South cases (which continue to be under-studied) or examples of North-North diffusion, for which the framework offers hypotheses that have largely remained untested. Only after several cases have been assessed in all of the quadrants of the model will it be clear how well it serves as a path towards prediction of diffusion mechanisms.

Finally, this research invites further reevaluation of common tropes about the oil industry and offers a new perspective on achieving superior energy governance in a fragmented but interconnected world. With its findings about the success of a petroleum regime opposed by home countries and Northern oil corporations, this research challenges the notion that powerful actors are both willing and able to impose their preferences on developing country host

[791] Author's in-person interview with academic and industry consultant (6/5/2015).

governments. Neither the military force of the U.S. government nor the obvious need for foreign investment were sufficient to sway the Iraqi government in its choice of oil regime. Similarly, loud objections by multinational oil companies have proven insufficient to prevent regime change in Brazil or Russia, even if such a choice would carry obvious costs. Rather, host governments are sensitive to questions of sovereignty and control, and look to those they perceive as similar to learn about politically feasible solutions. Alternatively, they may prefer to seek out those to whose position they aspire, imitating their laws even if the outcome may be economically sub-optimal. In many – but not all – instances, processes of learning and emulation have led to the PSA.

It is noteworthy that the global shift towards the PSA regime has largely taken place in the absence of formal coordination. Although organizations like OPEC and the World Bank have played some role in presenting policy options and sharing best practices, learning and emulation have often traveled through informal or uncoordinated channels. As many have noted, growing multipolarity has impeded the creation of formalized global regimes on climate change and energy, [792] with policy remaining at the level of the nation-state. At the same time, interdependence means that the choices of individual states can have profound implications for others by shaping the flow of investments into new energy supplies. In light of the challenges of international coordination, diffusion offers a promising way forward. By identifying the most effective channels for inducing policy change, a two-level diffusion framework suggests that policy harmonization – especially in the South – is achievable. Information exchange, education

[792] See Van de Graaf and Colgan (2016: 2) as well as (Van de Graaf and Zelli (2016: 62-66). Formal institutions have been developed in the energy sphere, as analyzed by Colgan, Keohane, and Van de Graaf (2013) and Van de Graaf (2013), which form regime complexes rather than a single regime.

of advisors, and setting of appropriate role models are all paths that have effectively shaped the regimes for the control of oil and could be fruitfully applied in other areas of global governance.

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5 Interviews

All interviews were conducted in confidentiality. The names of interviewees are withheld by mutual agreement. Interviews held off the record are not listed. Interviews are listed in chronological order.

Academic focusing on oil & gas. Interview by Nicole Weygandt. Personal Interview. November 10, 2014. Washington, DC.

Oil & gas specialist in international governmental organization. Interview by Nicole Weygandt. Personal Interview. November 11, 2014. Washington, DC.

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Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. December 4, 2014. Washington, DC.

Oil & gas consultant. Interview by Nicole Weygandt. Personal Interview. December 5, 2014. Washington, DC.

Oil & gas consultant, former legal expert at international governmental organization. Interview by Nicole Weygandt. Personal Interview. December 5, 2014. Washington, DC Metro Area.

Oil & gas consultant. Interview by Nicole Weygandt. Personal Interview. December 9, 2014. Washington, DC.

Think tank scholar focusing on oil & gas. Interview by Nicole Weygandt. Personal Interview.

December 18, 2014. Washington, DC.

Oil & gas lawyer. Interview by Nicole Weygandt. Skype Interview. December 19, 2015. Washington, DC.

Academic and industry consultant. Interview by Nicole Weygandt. Skype Interview. June 2, 2015.

Academic and industry consultant. Interview by Nicole Weygandt. Personal Interview. June 5, 2015. Boston, MA.

Oil & gas finance specialist. Interview by Nicole Weygandt. Personal Interview. June 13, 2015. Houston, TX.

Oil & gas consultant. Interview by Nicole Weygandt. Skype Interview. June 18, 2015.

Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. June 18, 2015. Houston, TX.

Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. June 19, 2015. Houston, TX.

Oil & gas tax specialist. Interview by Nicole Weygandt. Personal Interview. June 19, 2015. Houston, TX.

Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. June, 22 2015. Houston, TX.

Oil & gas service company engineer. Interview by Nicole Weygandt. Personal Interview. June 22, 2015. Houston, TX.

Oil & gas consultant. Interview by Nicole Weygandt. Skype Interview. June 23, 2015.

Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. July 6, 2015. New York, NY.

Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. July 7, 2015. New York, NY.

Oil & gas specialist in non-governmental organization. Interview by Nicole Weygandt. Personal Interview. July 8, 2015. New York, NY.

Oil & gas lawyer and academic. Interview by Nicole Weygandt. Skype Interview. July 15, 2015.

Three oil & gas lawyers. Interview by Nicole Weygandt. Personal Interview. July 19, 2015. Houston, TX.

Oil & gas academic and member of non-governmental organization. Interview by Nicole Weygandt. Phone Interview. July 20, 2015.

Oil & gas engineer and economist. Interview by Nicole Weygandt. Personal Interview. July 20, 2015. Houston, TX.

Oil & gas lawyer. Interview by Nicole Weygandt. Personal Interview. July 21, 2015. Houston, TX.

Oil & gas consultant. Interview by Nicole Weygandt. Personal Interview. July 22, 2015 (a). Houston, TX.

Oil & gas consultant. Interview by Nicole Weygandt. Personal Interview. July 22, 2015 (b). Houston, TX.

Oil & gas consultant. Interview by Nicole Weygandt. Personal Interview. July 22, 2015 (c). Houston, TX.

Two oil & gas consultants. Interview by Nicole Weygandt. Personal Interview. July 23, 2015. Houston, TX.

Oil & gas tax lawyer. Interview by Nicole Weygandt. Personal Interview. July 24, 2015. Houston, TX.

Three oil & gas lawyers. Interview by Nicole Weygandt. Personal Interview. July 24, 2015. Houston, TX.

Oil & gas consultant. Interview by Nicole Weygandt. Phone Interview. July 30, 2015.

Oil & gas company negotiator. Interview by Nicole Weygandt. Phone Interview. August 20, 2015.

APPENDICES

1 Alternative Emulation and Competition Measures

1.1 Operationalization

The following results apply different measures for emulation and coercion than those presented in the primary text.

I break ***emulation*** into three separate variables: *PSA emulation*, *concession emulation*, and *service contract emulation*. In order to construct this variable, all countries are grouped into one of three types: core, inward-oriented periphery, and outward-oriented periphery. Core countries are members of either the European Union (EU) or the Organization for Economic Cooperation and Development (OECD), whereas periphery countries are not members of either of these organizations. Elite orientation is determined by a country's score on the Dreher, Gaston and Martens KOF Globalization Index. This index measures three forms of openness to globalization: economic, political and social, which cover trade and investment flows, trade and capital restrictions, personal contacts, information flows, cultural proximity, and political ties in the form of embassies, international organization membership, treaties, and several other measures. These openness scores are available on a scale of 0 to 100, with a mean of 45.91.[793] Countries that score at or above the mean are coded 1 to denote an outward orientation, while countries scoring below the mean value are considered inward-oriented for the purposes of this analysis, and are coded 0. Based on these classifications, core countries are coded 1 for concession emulation and 0 for both other forms of emulation. Inward-oriented periphery states

[793] There are 24 separate indicators that make up the index, which are subjected to different weights to make up aggregate indices. In the case of the overall globalization index, Economic globalization accounts for 36%, Social Globalization for 37% and Political Globalization for 27% of the aggregate score (Dreher 2006).

are coded 1 for service emulation and PSA emulation and 0 for concession emulation, while outward-oriented periphery states are coded 1 for PSA emulation and concession emulation, and 0 otherwise.

The alternative measure of ***coercion*** emphasizes the material importance of the private sector. I utilize a measure of foreign direct investment (*FDI*), specifically the size of inward FDI measured as a percentage of gross domestic product (GDP). These figures, which are available from the United Nations Conference on Trade and Development (UNCTAD), cover 191 countries from 1970 to 2015.[794] Greater dependence on FDI, I suggest, translates into greater sensitivity to the demands of the private sector and its threats to withdraw from the country. While, in ideal circumstances, this FDI measure would be specific to the oil or energy industries, sector-level data are available only for an extremely limited sample of countries. [795] It could be argued that the relationship between FDI and coercive potential is reversed. That is, high levels of FDI as a share of economic activities will tend to reflect diversification and attractiveness as an investment destination, reducing a country's reliance on investment from a single company or sector and therefore reducing the effectiveness of coercive threats.

[794] UNCTAD relies primarily on official national FDI data, but also draws on data from international organizations along with its own estimates.

[795] Specifically, disaggregated FDI flows are available primarily only for developed countries, which exhibit almost no variation on the dependent variable and therefore provide limited analytical leverage. In spite of its imprecision, an aggregate measure of FDI was selected by virtue of its greater availability.

1.2 Alternate Results without Interaction Terms

TABLE 16. LOGIT MODEL OF PETROLEUM REGIME DIFFUSION

	Concession	**PSA**	**Service Contract**
Learning	0.04*	0.04**	0.12**
(*lagged*)	(0.02)	(0.02)	(0.04)
Emulation	1.07**	1.28**	0.34
(*lagged*)	(0.42)	(0.49)	(0.73)
FDI	-0.06	1.96**	-6.10**
(standardized, lagged)	(0.11)	(0.88)	(1.89)
Oil Production	-0.02	-0.31	0.54**
(standardized, lagged)	(0.16)	(0.23)	(0.13)
Oil Price	-0.00	-0.01	0.01
(lagged)	(0.03)	(0.03)	(0.01)
Political Constraints	0.08	-0.90	2.61**
(standardized, lagged)	(0.76)	(0.86)	(0.82)
GDP per Capita	0.18	-0.19	0.17
(standardized, lagged)	(0.28)	(0.32)	(0.46)
Country Type			
(*base category: North)*			
Outward South	-2.59**	3.15**	1.32
	(1.17)	(0.86)	(1.67)
Inward South	-2.12**	3.19**	0.51
	(1.06)	(0.76)	(1.60)
Years (*omitted)*			
Constant	-0.84	-3.46**	-6.48**
	(2.96)	(1.28)	(1.79)
Pseudo R^2	0.3003	0.3661	0.3331
Log Pseudolikelihood	-1541	-1390	-719
Observations	3186	3186	3173
Clusters	124	124	124

Notes: * denotes $p < 0.10$, ** denotes $p < 0.05$. Standard Errors are reported in parentheses.

TABLE 17. LOGIT MODEL OF THE EFFECTS OF DIFFUSION MECHANISMS ON PETROLEUM REGIME, ODDS RATIOS

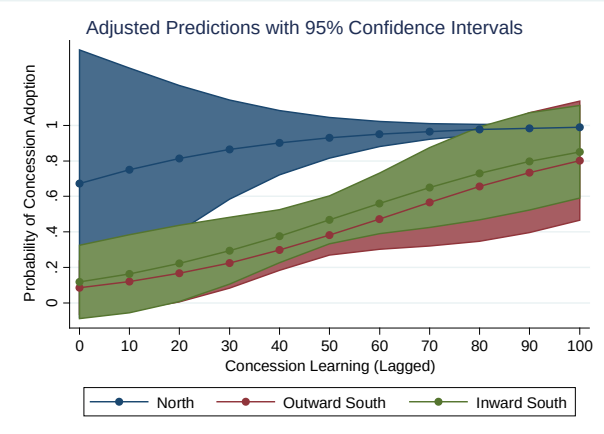
	Concession	**PSA**	**Service Contract**
Learning	1.04*	1.04**	1.13**
(*lagged*)	(0.02)	(0.02)	(0.05)
Emulation	2.93**	3.61**	1.41
(*lagged*)	(1.53)	(1.75)	(1.03)
FDI	0.94	7.09**	0.00**
(standardized, lagged)	(0.10)	(6.23)	(0.00)
Oil Production	0.98	0.73	1.71**
(standardized, lagged)	(0.16)	(0.17)	(0.23)
Oil Price	1.00	0.99	1.01
(lagged)	(0.03)	(0.03)	(0.01)
Political Constraints	1.08	0.41	13.51**
(standardized, lagged)	(0.83)	(0.35)	(11.11)
GDP per Capita	1.20	0.82	1.18
(standardized, lagged)	(0.34)	(0.26)	(0.54)
Country Type			
(*base category: North)*			
Outward South	0.07**	23.44**	3.74
	(0.09)	(20.17)	(6.23)
Inward South	0.12**	24.25**	1.85
	(0.13)	(18.51)	(2.95)
Years (*omitted)*			
Constant	0.43	0.03**	0.00**
	(1.28)	(0.04)	(0.00)
Pseudo R^2	0.3003	0.3661	0.3331
Log Pseudolikelihood	-1541	-1390	-719
Observations	3186	3186	3173
Clusters	124	124	124

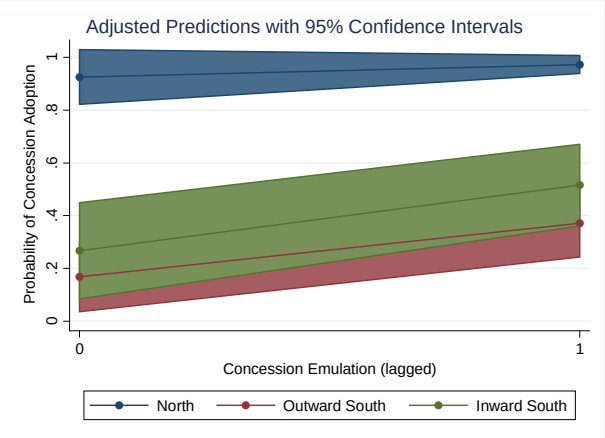
Notes: * denotes $p < 0.10$, ** denotes $p < 0.05$. Standard Errors are reported in parentheses.

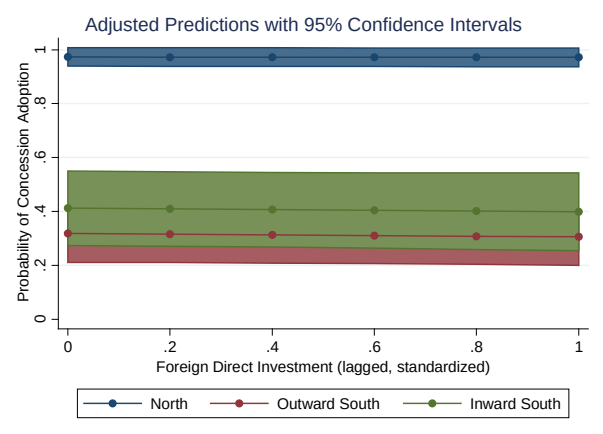
TABLE 18. AVERAGE MARGINAL EFFECTS AT MEANS, BY COUNTRY TYPE

	Concession			**PSA**			**Service Contract**		
	North	Outward South	Inward South	North	Outward South	Inward South	North	Outward South	Inward South
Learning	0.00	0.01**	0.01**	0.00	0.01**	0.01**	0.00	0.01**	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Emulation	0.06	0.20**	0.24**	0.03	0.25**	0.26**	0.01	0.03	0.02
	(0.05)	(0.09)	(0.11)	(0.02)	(0.09)	(0.09)	(0.02)	(0.08)	(0.05)
FDI	-0.00	-0.01	-0.01	0.03	0.35**	0.42**	-0.12	-0.59**	-0.39**
	(0.00)	(0.02)	(0.02)	(0.02)	(0.16)	(0.18)	(0.10)	(0.22)	(0.15)
Oil Production	-0.00	-0.00	-0.00	-0.00	-0.06	-0.07	0.01	0.05**	0.03**
	(0.01)	(0.03)	(0.03)	(0.00)	(0.04)	(0.05)	(0.01)	(0.01)	(0.01)

FIGURE 19. ADJUSTED PREDICTIONS AT MEAN VALUES FOR MECHANISMS OF DIFFUSION, CONCESSIONS







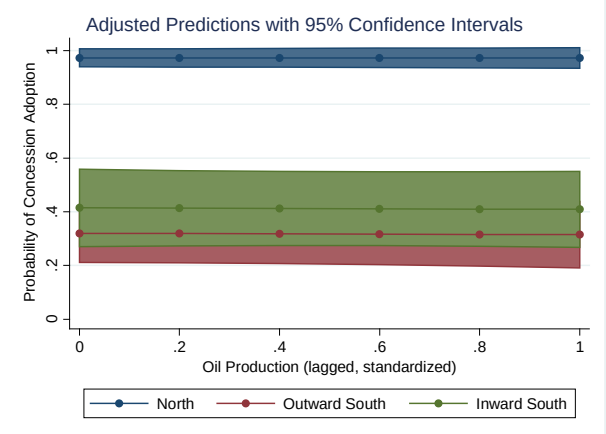


FIGURE 20. ADJUSTED PREDICTIONS AT MEAN VALUES FOR MECHANISMS OF DIFFUSION, PSAS

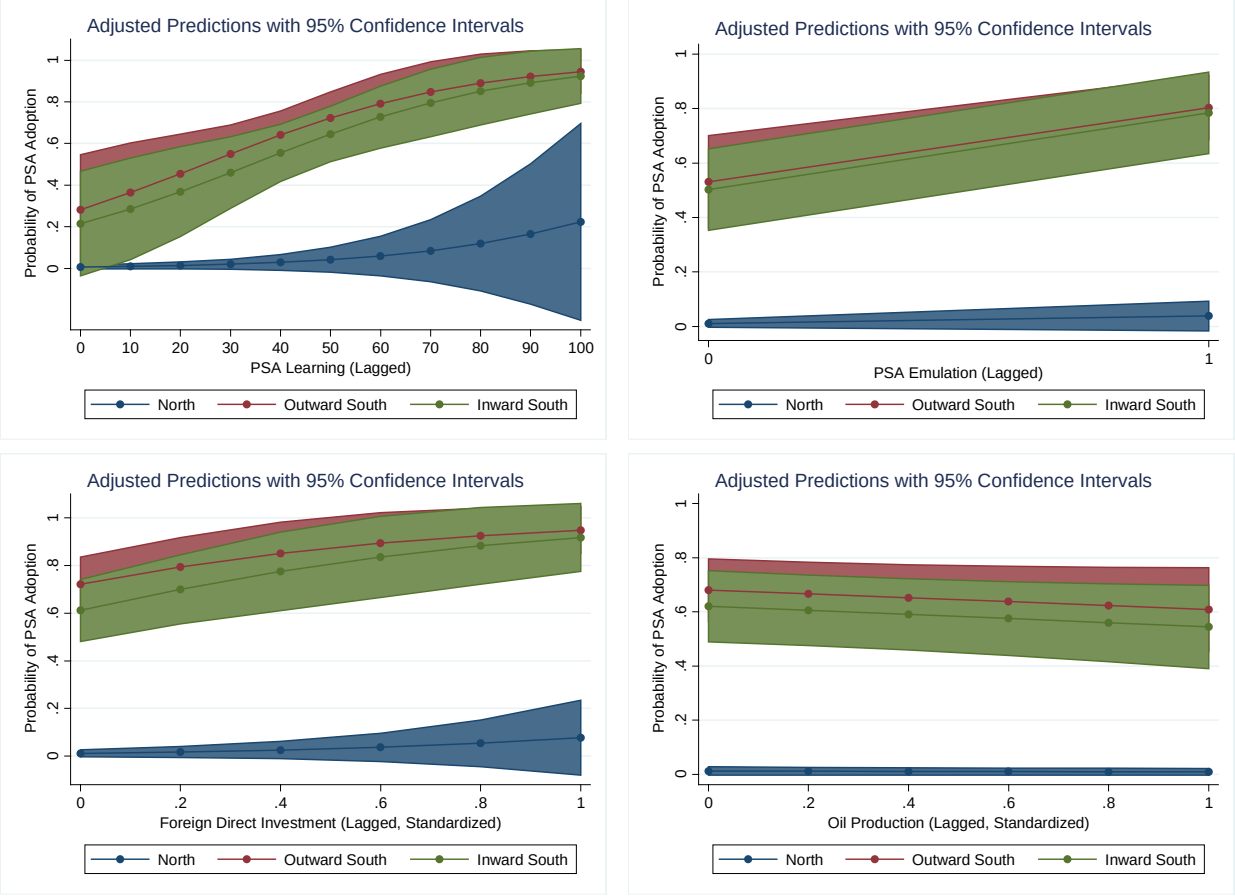
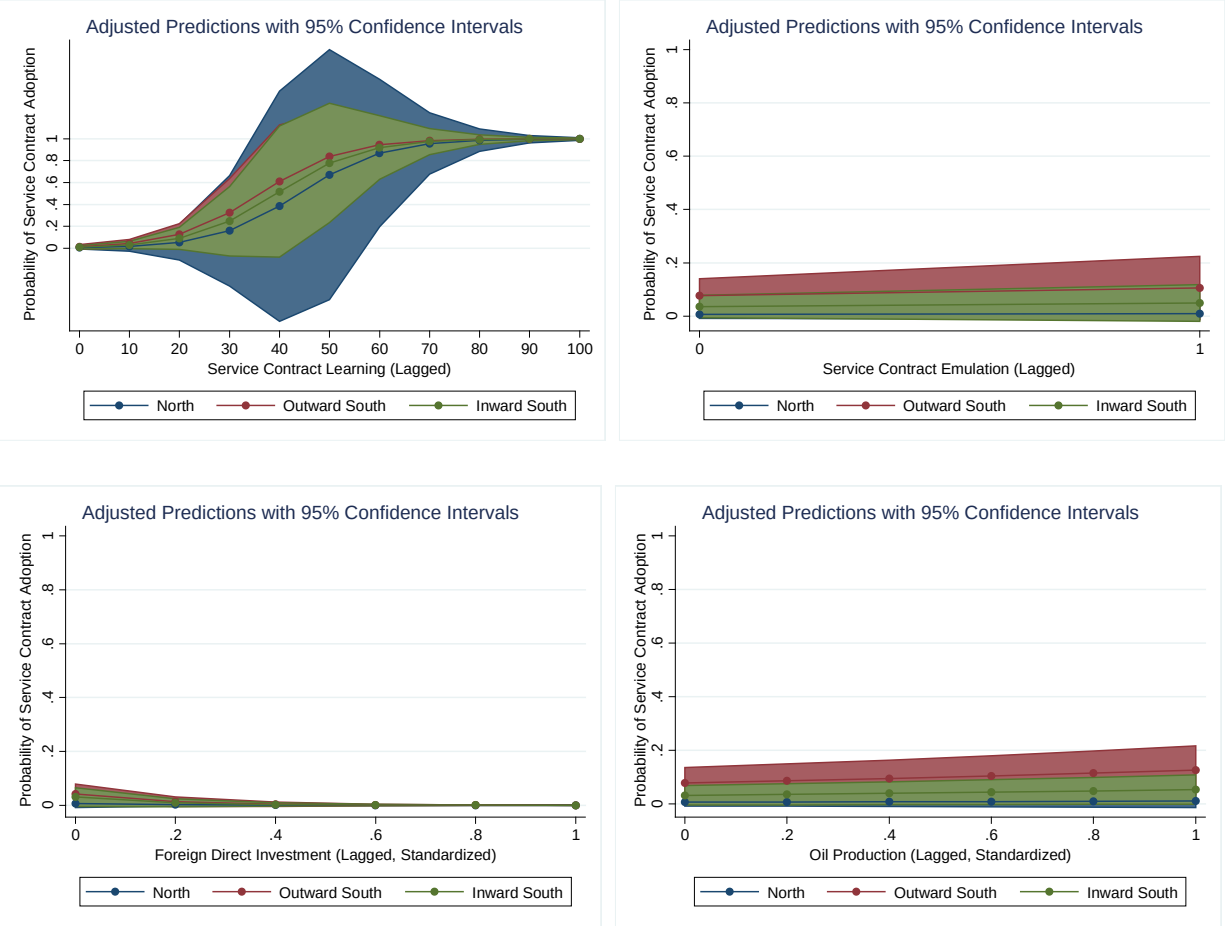


FIGURE 21. ADJUSTED PREDICTIONS AT MEAN VALUES FOR MECHANISMS OF DIFFUSION, SERVICE CONTRACTS



1.3 Alternate Results, with Interaction Terms

TABLE 19. LOGIT MODEL OF EFFECTS OF DIFFUSION MECHANISMS ON PETROLEUM REGIME, WITH INTERACTIONS

	Concession	PSA	Service Contract
Learning (*lagged*)			
North	0.08**	-0.06	0.47**
	(0.02)	(0.04)	(0.15)
Outward South	0.03	0.05**	0.11**
	(0.02)	(0.02)	(0.04)
Inward South	0.04**	0.05**	0.13**
	(0.02)	(0.02)	(0.04)
Emulation (*lagged*)	1.11**	1.41**	0.51
	(0.53)	(0.50)	(0.71)
FDI *(standardized, lagged)*			
North	-0.01	3.38**	0.04
	(0.08)	(0.98)	(0.10)
Outward South	-0.42	1.90	-11.24**
	(0.92)	(2.12)	(3.21)
Inward South	-0.56	1.31	-5.95**
	(0.73)	(0.96)	(1.99)
Oil Production *(standardized, lagged)*			
North	-0.53*	-0.26	0.42**
	(0.28)	(0.20)	(0.20)
Outward South	-0.11	-0.40	0.68
	(0.29)	(0.32)	(0.43)
Inward South	0.09	-0.31	0.58**
	(0.17)	(0.26)	(0.19)
Oil Price (*lagged*)	-0.02	-0.02	0.00
	(0.03)	(0.03)	(0.01)
Political Constraints *(standardized, lagged)*	-0.00	-1.06	2.77**
	(0.76)	(0.84)	(0.71)
GDP per Capita *(standardized, lagged)*	0.13	-0.28	0.00
	(0.30)	(0.32)	(0.01)
Years (*omitted)*			

	Concession	PSA	Service Contract
Constant	-2.20	-0.14	-6.01**
	(2.27)	(1.07)	(0.94)
Pseudo R^2	0.3159	0.3552	0.3645
Log Pseudolikelihood	-1506	-1413	-685
Observations	3186	3186	3173
Clusters	124	124	124

Notes: * denotes $p < 0.10$, ** denotes $p < 0.05$. Standard Errors are reported in parentheses.

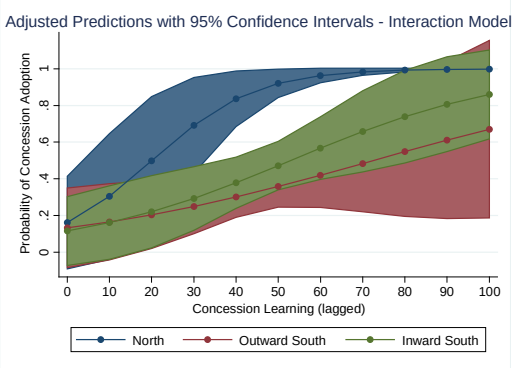
TABLE 20. LOGIT MODEL OF EFFECTS OF DIFFUSION MECHANISMS ON PETROLEUM REGIME, WITH INTERACTIONS (BASE CATEGORY: NORTH), ODDS RATIOS

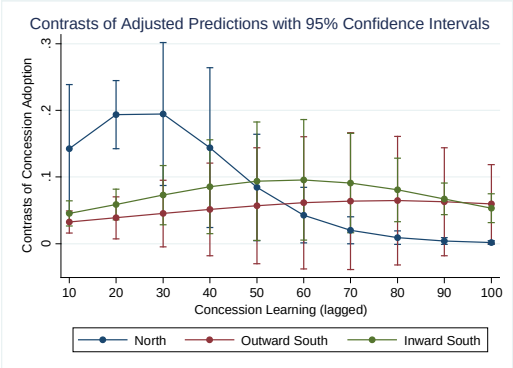
	Concession	PSA	Service Contract
Country Type			
Outward South	11.30**	110.46	10.18**
	(4.59)	(85.88)	(2.48)
Inward South	10.62**	110.25	9.45**
	(4.71)	(85.80)	(2.53)
Learning	0.26**	0.09	1.36**
(*lagged*)	(0.09)	(0.06)	(0.07)
Learning x Outward South	-0.24**	-0.05	-1.28**
	(0.09)	(0.06)	(0.08)
Learning x Inward South	-0.22**	-0.05	-1.26**
	(0.09)	(0.06)	(0.08)
Emulation	1.12**	1.24**	0.48
(*lagged*)	(0.52)	(0.50)	(0.65)
FDI	-0.07	1.45**	-1.50
(standardized, lagged)	(0.09)	(0.52)	(11.65)
FDI x Outward South	-0.18	1.33	-6.77
	(0.86)	(2.56)	(11.85)
FDI x Inward South	-0.58	-0.18	-3.88
	(0.69)	(1.03)	(11.55)
Oil Production	-0.48	-356.50	1.36**
(standardized, lagged)	(0.32)	(290.40)	(0.34)
Production x Outward South	0.33	356.15	-0.70
	(0.42)	(290.41)	(0.57)
Production x Inward South	0.57	356.20	-0.82**
	(0.37)	(290.42)	(0.40)
Oil Price	-0.03	-0.01	0.00
(lagged)	(0.03)	(0.03)	(0.01)
Political Constraints	0.01	-0.93	2.89**
(standardized, lagged)	(0.76)	(0.86)	(0.73)
GDP per Capita	0.15	-0.20	0.24
(standardized, lagged)	(0.29)	(0.32)	(0.43)
Years (*omitted)*			
Constant	-12.20**	-110.64	-15.42

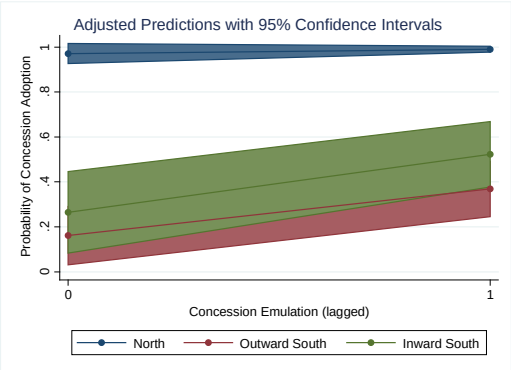
	Concession	PSA	Service Contract
	(4.54)	(85.91)	(2.73)
Pseudo R^2	0.3282	0.3719	0.3885
Log Pseudolikelihood	-1479	-1377	-659
Observations	3186	3186	3173
Clusters	124	124	124

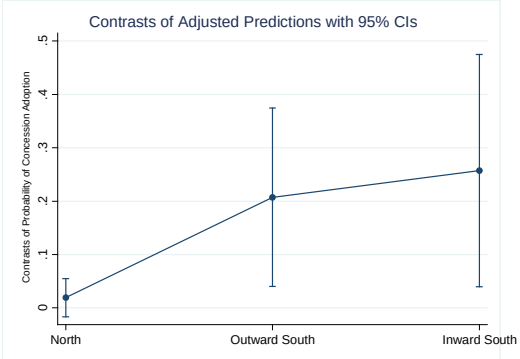
Notes: * denotes $p < 0.10$, ** denotes $p < 0.05$. Standard Errors are reported in parentheses.

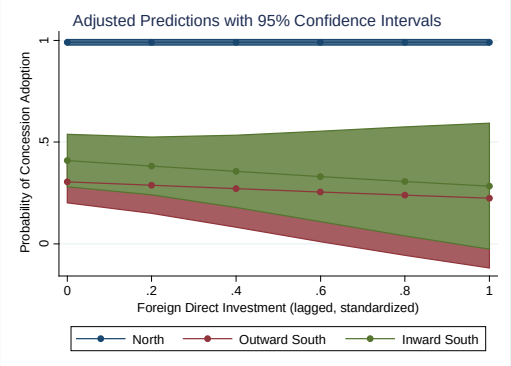
FIGURE 22. ADJUSTED PREDICTIONS FOR CONCESSION ADOPTION

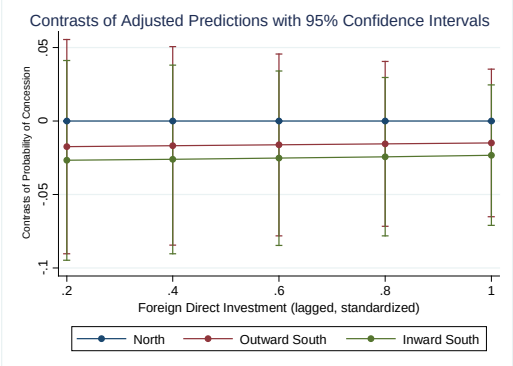


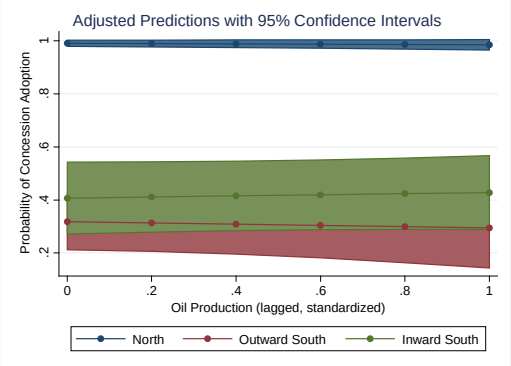












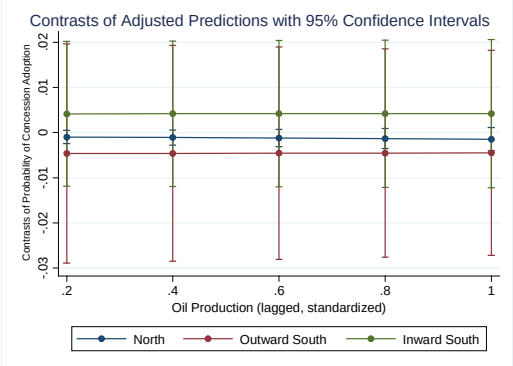
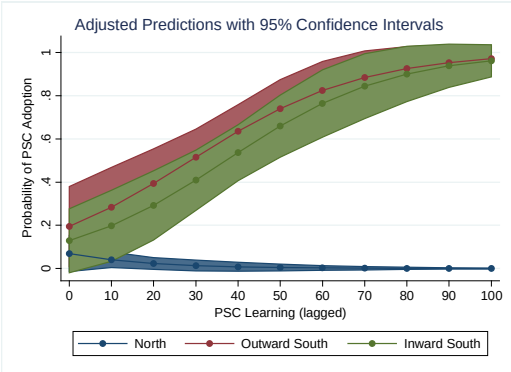
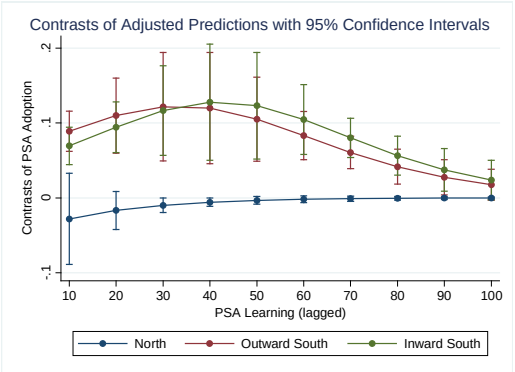
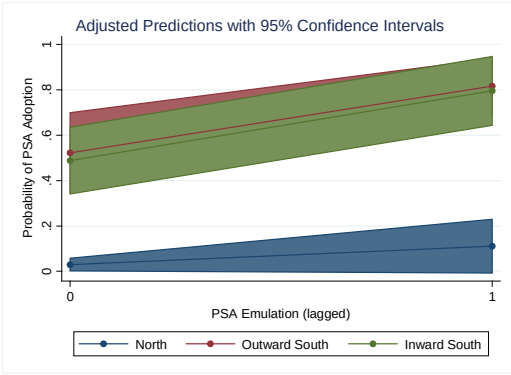
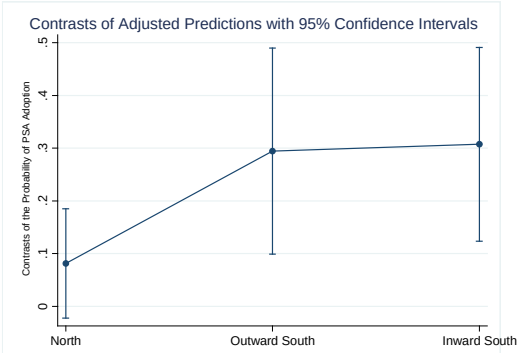


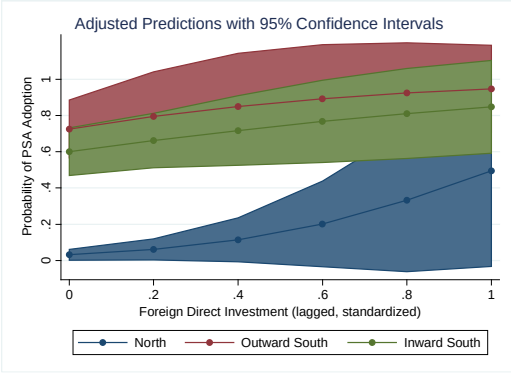
FIGURE 23. ADJUSTED PREDICTIONS FOR PSA ADOPTION

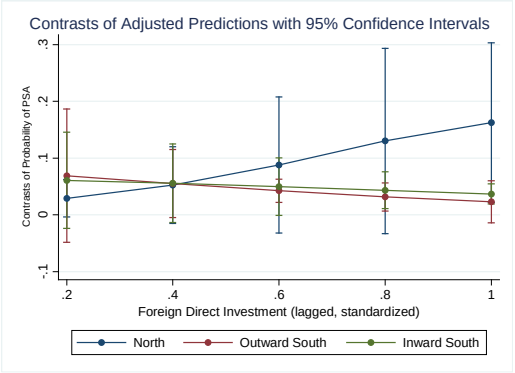


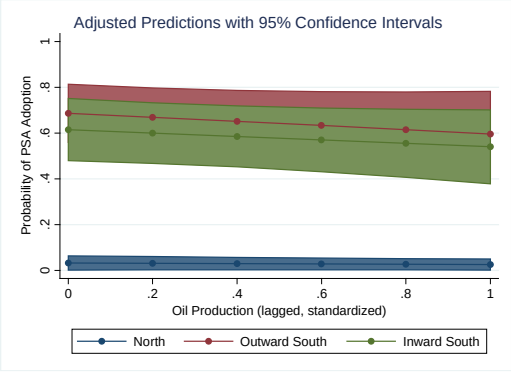












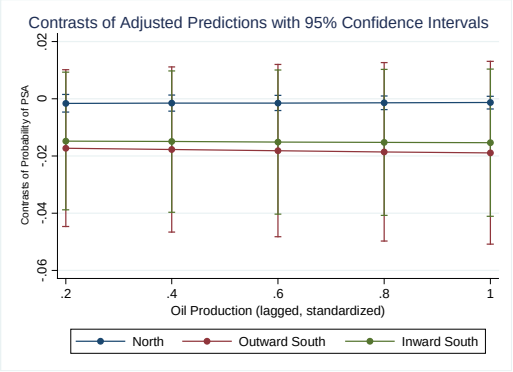
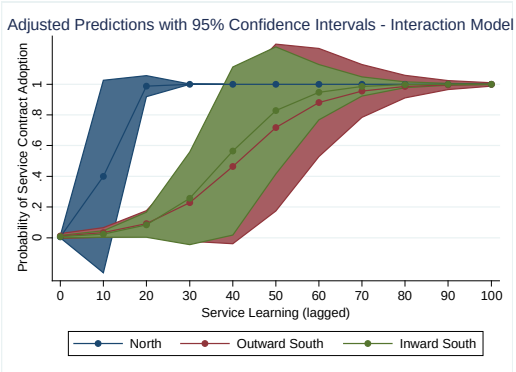
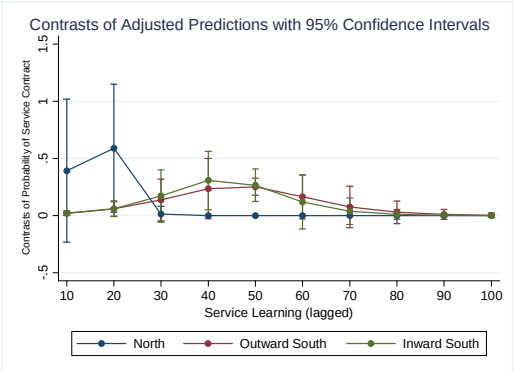
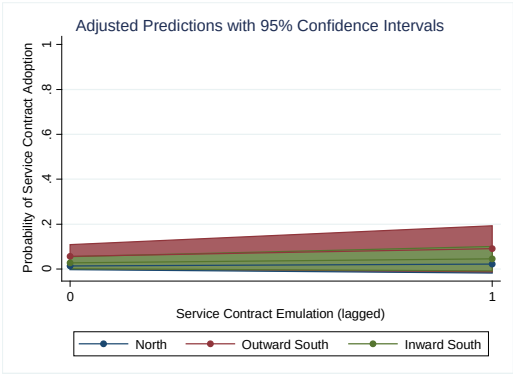
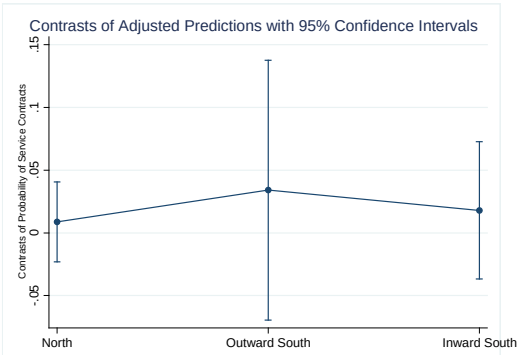


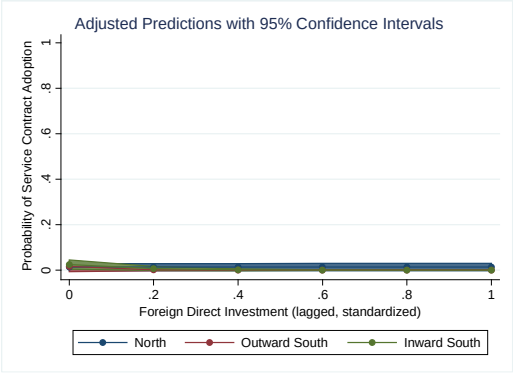
FIGURE 24. ADJUSTED PREDICTIONS FOR SERVICE CONTRACT ADOPTION

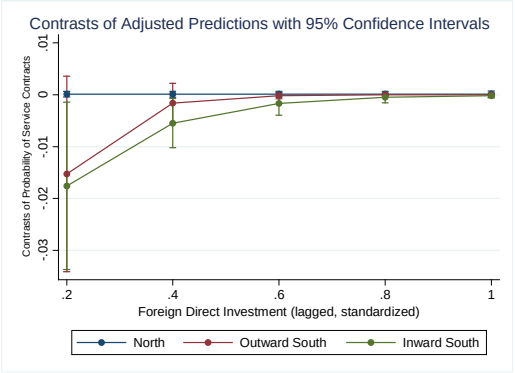


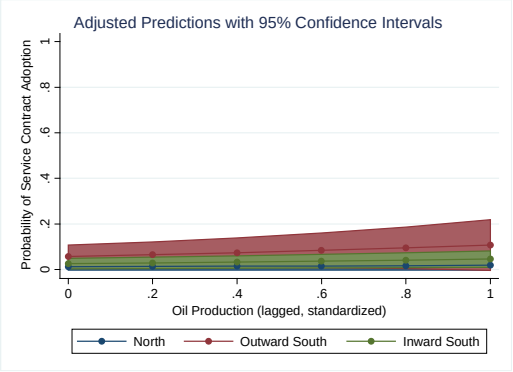


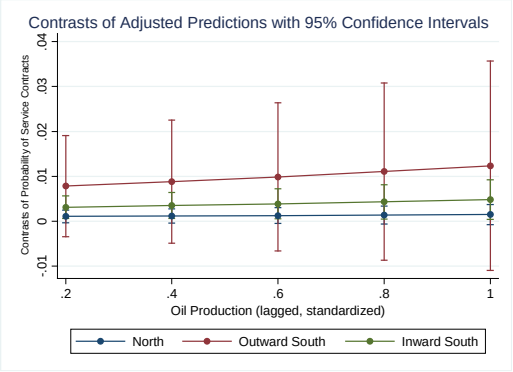












2 Additional Data Pertaining to 4.2 Model

FIGURE 25. CONTRASTS OF ADJUSTED PREDICTIONS FOR CONCESSION ADOPTION, INTERACTION MODEL

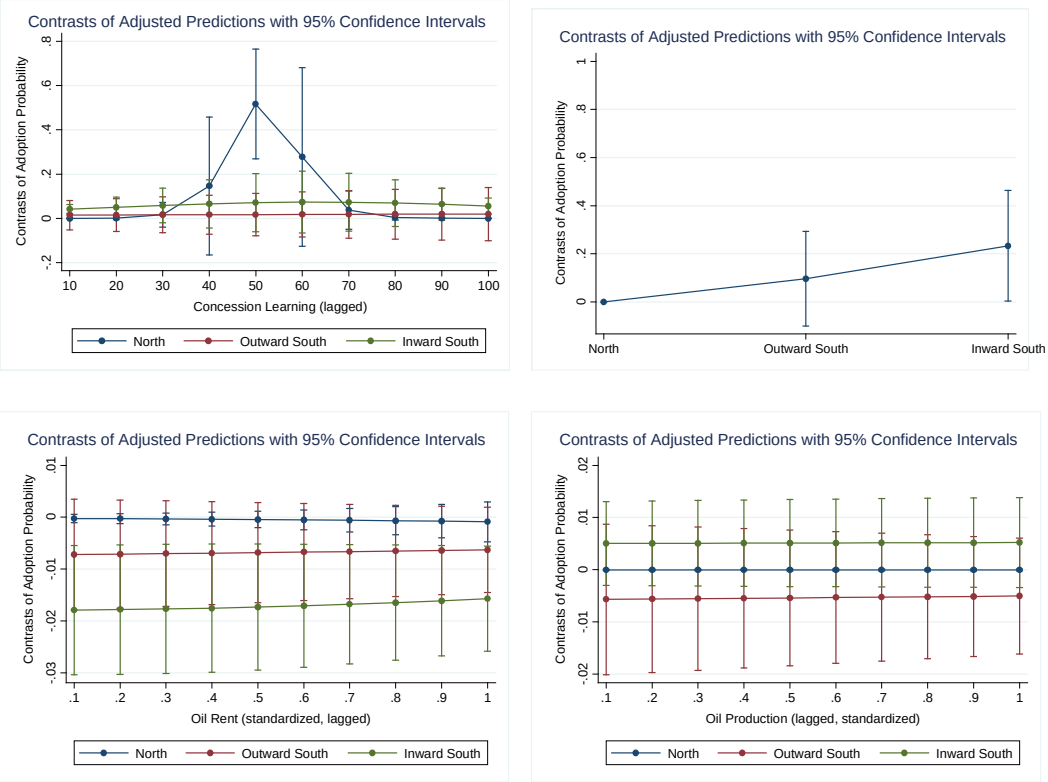
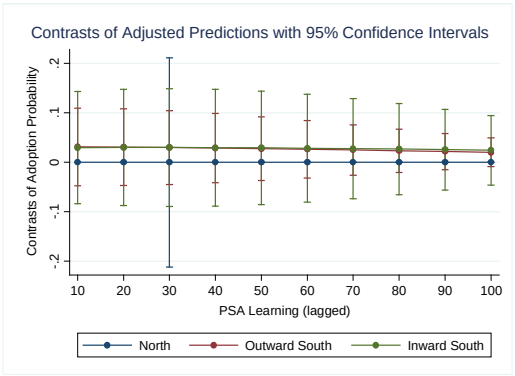
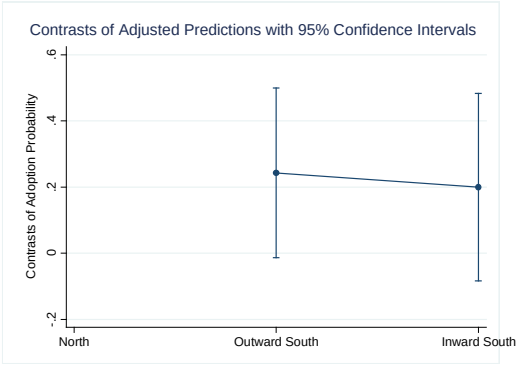
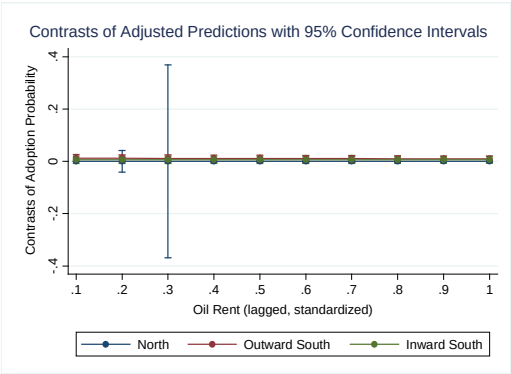


FIGURE 26. CONTRASTS OF ADJUSTED PREDICTIONS FOR PSA ADOPTION, INTERACTION MODEL







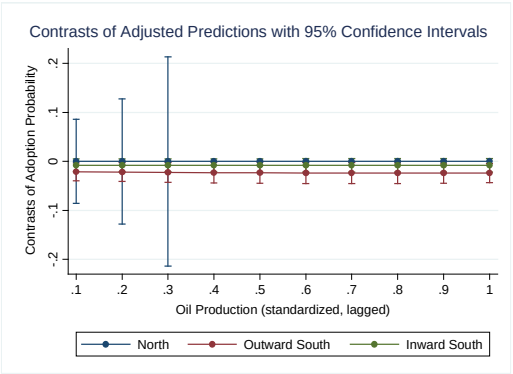
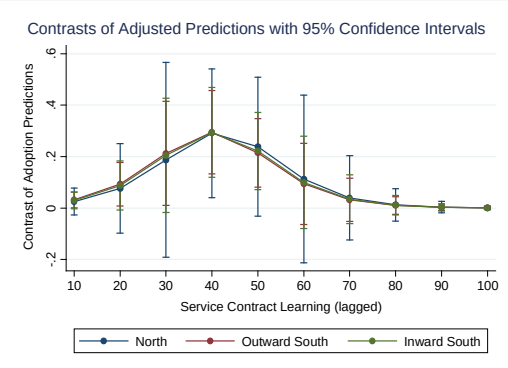
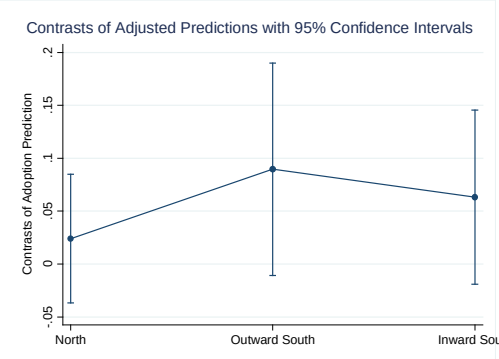
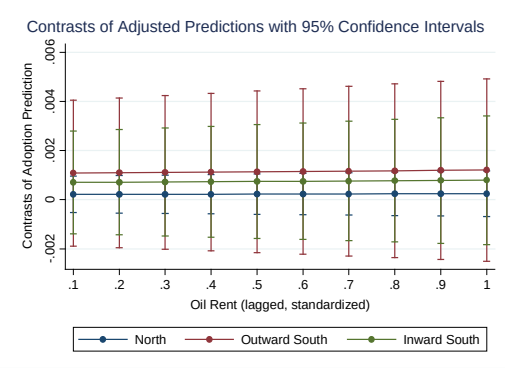


FIGURE 27. CONTRASTS OF ADJUSTED PREDICTIONS FOR SERVICE CONTRACT ADOPTION, INTERACTION MODEL







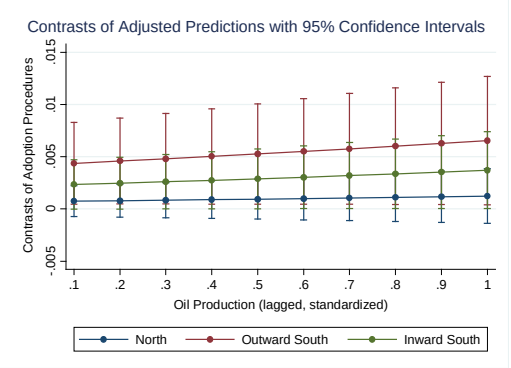


TABLE 21. LOGIT MODEL OF EFFECTS OF DIFFUSION MECHANISMS ON PETROLEUM REGIME, ALL COUNTRIES WITH INTERACTIONS

	Concession	PSA	Service Contract
Learning (*lagged*)			
North	0.24**	0.34**	6.57**
	(0.07)	(0.07)	(1.54)
Outward South	0.01	0.01	0.09**
	(0.02)	(0.02)	(0.04)
Inward South	0.03	0.01	0.13**
	(0.03)	(0.02)	(0.04)
Emulation (*lagged*)			
North-Regional Regime Leader	0.15	0	30.52**
	(1.24)	(.)	(11.16)
Outward South-No Regional Regime Leader	11.22**	356.33**	56.08**
	(4.03)	(148.97)	(14.72)
Outward South-Regional Regime Leader	11.70**	357.48**	57.35**
	(4.03)	(148.95)	(14.68)
Inward South-No Regional Regime Leader	10.22**	356.67**	55.17**
	(4.06)	(148.89)	(14.44)
Inward South- Regional Regime Leader	11.21**	357.52**	55.55**
	(4.12)	(148.94)	(14.36)
Oil Rent *(standardized, lagged)*			
North	-1.45	71.69**	26.00**
	(1.29)	(24.79)	(6.20)
Outward South	-0.34	0.50*	-0.05
	(0.24)	(0.30)	(0.27)
Inward South	-0.72**	0.25	0.32
	(0.25)	(0.29)	(0.29)
Oil Production *(standardized, lagged)*			
North	-0.45	-1257.80**	8.23**
	(0.32)	(510.14)	(1.95)
Outward South	-0.28	-0.97**	0.88*
	(0.36)	(0.42)	(0.48)
Inward South	0.21	-0.33	0.46**
	(0.18)	(0.28)	(0.20)
Oil Price (*lagged*)	-0.04	-0.01	0.01

	Concession	PSA	Service Contract
	(0.03)	(0.03)	(0.01)
Political Constraints *(standardized, lagged)*	0.22	-1.35	2.65**
	(0.82)	(0.88)	(0.67)
GDP per Capita *(standardized, lagged)*	0.65**	-0.47	0.02
	(0.31)	(0.37)	(0.58)
Years (*omitted)*			
Constant	-11.03	-355.80	-60.83
	(4.18)	(148.97)	(14.64)
Pseudo R^2	0.3604	0.3566	0.4066
Log Pseudolikelihood	-1263	-1213	-601
Observations	2851	2728	2841
Clusters	119	115	119

Notes: * denotes $p < 0.10$, ** denotes $p < 0.05$. Standard Errors are reported in parentheses.

3 Additional Data Pertaining to 4.3 Model

TABLE 22. AVERAGE MARGINAL EFFECTS AT MEANS, BY COUNTRY AND REGIME TYPE

	Concession			**PSA**			**Service Contract**	**Mixed Regime**
	North	Outward South	Inward South	North	Outward South	Inward South		
Concession Learning	0.00**	0.01**	0.02**	-0.00*	-0.01**	-0.01**		
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
PSA Learning	0.00**	0.00**	0.01**	-0.00**	-0.00	-0.00**		
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Service Learning	0.00	0.01**	0.01**	-0.00**	-0.01**	-0.01*		
	(0.00)	(0.00)	(0.00)	(0.0)	(0.00)	(0.00)		
Concession Emulation	0.04**	0.16**	0.25**	-0.01**	-0.15**	-0.18	Cannot be reliably estimated	Cannot be reliably estimated
	(0.01)	(0.03)	(0.03)	(0.00)	(0.03)	(0.04)		
PSA Emulation	-0.01	-0.06**	-0.09**	0.01**	0.12**	0.11**		
	(0.01)	(0.03)	(0.03)	(0.00)	(0.04)	(0.04)		
Service Emulation	-0.02	0.02	0.04	-0.00	-0.09*	-0.07*		
	(0.02)	(0.04)	(0.04)	(0.00)	(0.05)	(0.05)		
Oil Rent	-0.04**	-0.13**	-0.17**	0.01**	0.10**	0.13**		
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)		
Oil Production	-0.01	0.03**	0.05**	-0.01**	-0.16**	-0.15**		
	(0.00)	(0.01)	(0.01)	(0.00)	(0.02)	(0.02)		